



FLIGHT

First Aero Weekly in the World.

Founder and Editor: STANLEY SPOONER.

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport.

OFFICIAL ORGAN OF THE ROYAL AERO CLUB OF THE UNITED KINGDOM.

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EDITORIAL COMMENT.

Catastrophic Instability. At the recent British Association meeting, Mr. F. W. Lanchester read a very interesting paper, which will shortly be published, drawing attention to a form of instability that he calls "catastrophic" and which is inherent in any aeroplane capable of flying either right way up or upside down without alteration of the elevator setting.

When a ballasted flat plate is launched from the hand, it may, if disturbed, proceed to dive, and when vertical it may turn on its back and continue its flight upside down in the direction of the point from which it started. Ordinarily, it will recover from the dive by the usual manœuvre of flattening out, and will proceed in its original direction of motion. The occasional happening of the alternative course is manifestation of catastrophic instability, and it is most readily demonstrated in the flat plate. In principle, however, it is equally inherent in any form of aeroplane that is capable of flight in an inverted position without alteration of the elevator control.

In practice, what this theory amounts to is that a machine catastrophically unstable in design is liable, during a steep dive, to be suddenly switched off from its path of normal recovery on to a path of inverted recovery, where it will fly upside down. Unless strapped in, the

pilot would, of course, be thrown out of the machine long prior to its attaining its inverted position, for when the aeroplane points downwards very steeply the pilot is no longer supported in his seat, and, indeed, what pressure he exerts with his legs against the rudder-bar tends rather to throw him out of the machine, for his feet are behind the centre of gravity of his body in such a position.

The existence of catastrophic instability does not prejudice the control of the machine by means of the elevator, but it is important to bear in mind that, when the machine is very steep, any pull upon the elevator lever takes effect rather in pulling the pilot out of his seat than in pulling the control lever towards the pilot. If the pilot is properly strapped in he retains control of his machine, but when he is not strapped in at all there is a critical angle of descent at which he will be unable to pull back the elevator lever without pulling himself out of the seat at the same time. This is due, as has been explained above, to the fact that the abutment of his seat against the rudder-bar lies behind the centre of gravity of his body.

The peculiar danger of very steep descents lies in a number of factors that are not always borne in mind as much as they should be. There is, first of all the effect of the higher velocity producing greater sensitiveness of the control and thus exaggerating any slight error of judgment. Again, the same increased velocity causes the machine to fly at a finer angle, and so there is less latitude for an error of judgment to be made with impunity. Moreover, the angle is still finer because the air-borne weight on the wings is reduced owing to the slope of the path of descent.

An even more important factor is the influence of horizontal gusts on a machine descending steeply. When flying horizontally, the effect of a horizontal gust coming head on is merely to alter the relative velocity, but when a horizontal gust strikes a descending machine, it alters the virtual angle of the wings, and if the slope of descent is very steep, a very small gust may produce a very marked effect.

There is an especial point of importance in this matter, which must not be overlooked. If the machine is descending head to wind, a gust that increases the velocity of the wind will decrease the virtual wing angle, and so tend to make the machine dive more steeply. In moderate weather, there is also to be considered the general variation in wind velocity at different altitudes ;

the probable wind velocity being less as the machine approaches the ground. If the machine descends in a following wind from a high altitude, this steady decrease in the velocity will also tend to diminish the wing angle and increase the steepness of descent.

One way and another, theory and experience both point to the dive as a manoeuvre that should only be practised by experienced pilots with great caution, and then only when they are securely fastened in their machines. Experienced or not, they are at any time liable to get tilted into a critical angle, at which they may be in great danger of being thrown out of their seats, and many experienced pilots have, in fact, already known the sensation of leaving their seats, although they have been fortunate enough to regain control.

Ignorance or lack of appreciation of the attitude of his own machine in flight is no excuse for a pilot getting into a dangerous condition. It is a simple matter to fit an air-speed indicator or an incidence indicator, and having fitted a reliable instrument it is only a question of discretion to use it as a safeguard. The systematic use of the air-speed meter or the incidence indicator, together with the use of the ribbon, would, we feel convinced, do much to increase the safety of flying, and in this we are supported by the practice of some of the most experienced aviators.

"An
Irresponsible
Law
Congress."

Some of our readers may recollect that, rather more than two years ago, we fell foul of a body calling itself the "Congress Juridique International de Locomotion Aerienne," which had met in Paris for the ostensible purpose of drafting an international code of laws of the air. We criticised it somewhat severely on account of what we thought to be its utter irresponsibility, and, though its sponsors were at some pains to make it clear that the conference was engaged in serious and useful work, we saw no reason for modifying the opinions we expressed at the time. We had quite thought that this conference with the high-sounding title had gone the way of all flesh, but apparently this is not so, for we have before us a report from *The Times*, issued by this body after meeting in Madrid during the current month. We are still ignorant of the precise status of the conference, but we are willing to admit that, whether its deliberations have any weight or not, it is doing something which may be of use at that time in the future when it becomes necessary to codify the laws governing aerial navigation. The following is the text which appears in *The Times* :—

The report points out that a large number of divergent views have been put forward and ably supported by various schools of jurists in different countries as to the fundamental basis upon which an international code of the air space is to be built up. The first point which naturally arises for consideration is : To whom does the air space over a subjacent State belong ? On this point, broadly speaking, there are two main schools of thought :—



PARIS TO BORDEAUX AND

It is nothing short of extraordinary that the marvellous flight of Seguin from Paris to Bordeaux and back without a stop on Monday should have secured even less attention this side of the Channel than Fourny's fine feat of flying about 700 kiloms. a day for twenty-three consecutive days, about a month ago. It is a most emphatic commentary on the place which aviation has taken in the "common round" when such things can occur and yet pass almost unnoticed by the world at large. When set down in cold print the details of this latest performance are not very imposing, for there are so few. Seguin simply left the Buc aerodrome on his Henry Farman machine at two mins. past six on Monday morning, and the next news was that the machine had been seen circling above Bordeaux at 11.12 a.m., so that the 520 kiloms. had been covered in 5 hrs. 10 mins. The return journey was not so easy, as at Blois the pilot was overtaken by darkness. At Buc hope was almost given

1. Those who maintain that the air space is of its nature free.
2. Those who maintain the theory of the sovereignty of the subjacent State in the air space above its territory.

The first school may again be divided into partisans of :—

- (a) Air freedom without restriction.
- (b) Air freedom restricted by some special rights (not limited as regards height) of the subjacent State.
- (c) Air freedom restricted by a territorial zone.

Those who maintain the sovereignty theory may also be subdivided into partisans of :—

- (a) Full sovereignty without any restriction.
- (b) Full sovereignty restricted by the right of innocent passage for aerial navigation.
- (c) Full sovereignty up to a limited height only.

The various parties holding these separate views have never yet come to any agreement between themselves.

The English Aerial Navigation Acts, 1911 and 1913, assume full sovereignty rights, and recent legislation in France and Russia rests on the same assumption : while the Franco-German Convention regulating air-traffic, which is stated in the Press to have been recently concluded, admits the same principle in "authorizing" civil aerial circulation in each country, subject to certain conditions, and in allowing to each country the right of making such regulations as it pleases relative thereto.

Further the law of private rights of most civilized countries confers property, with certain restrictions in some cases, in the air space above the land of the landowner. It is a rule of the English Common Law, which also obtains generally in the United States of America. It is embodied in the Code Napoleon, in the Codes of Germany, Switzerland, Italy, the Netherlands, Belgium, Spain, Portugal, Austria, Japan, Turkey, and in the Statutes of at least one (Connecticut) of the United States of America. This shows that the principle of State sovereignty over the whole air space has been generally recognised by civilized nations, for, of course, the admission of the rights of private owners *usque ad coelum* involves the assertion of State sovereignty to the same extent.

It appears to the Committee impossible to contend that according to existing International Law the air space is free ; nor do they think that States would be willing to accept or to act on that view of the law. But they are of opinion that subject to such safeguards as subjacent States may think it right to impose, aerial navigation should be permitted as a matter of comity.

There is no reason to anticipate that the States will interfere with the passage of foreign airships through the air above their territories in an unreasonable manner, any more than they have interfered with the passage of foreign vehicles through their territories or of foreign vessels through their territorial waters. Indeed any action of this character must necessarily be prevented by considerations of reciprocal interest.

The committee therefore submitted the following resolutions :—

1. It is the right of every State to enact such prohibitions, restrictions, and regulations as it may think proper in regard to the passage of aircraft through the air space above its territories and territorial waters.
2. Subject to this right of subjacent States liberty of passage of aircraft ought to be accorded freely to the aircraft of every nation.

These resolutions were submitted to the Conference by Sir Erle Richards and supported by Sir Frederick Pollock, and after an interesting debate were carried by 22 votes to two.

There is no need for us to comment either on the Report or on the resolutions passed by the Congress—or the Committee, as it is apparently styled—since they speak for themselves. What we should, however, like to know is something about the standing and authority of the Congress.



BACK WITHOUT A STOP.

up that Seguin would be able to get back, but the fires were lighted, and presently the watchers were relieved to hear the characteristic hum of the Gnome motor. Out of the darkness Seguin *vol planed* down, landing at seven minutes past seven, so that his total time for the full distance of 1,040 kiloms. (about 650 miles) was 13 hrs. 5 mins. Seguin was flying for the Criterium of the Ae.C.F., which calls for the longest flight over an out and home course, with the turning points at least 500 kiloms. apart.

It may be mentioned that the world's records for duration and distance are 1,017 kiloms. in 13 hrs. 22 mins. made by Fourny on a Maurice Farman biplane in September of last year over a closed circuit at the Etampes aerodrome. Seguin's Henry Farman machine was fitted with an 80 h.p. Gnome motor and Chauviere propeller and when starting had 390 kilogs. of fuel on board.

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FLIGHT

MEN OF MOMENT IN THE WORLD OF FLIGHT. British Pilot.



MR. MARCUS D. MANTON.

MARCUS D. MANTON. BRITISH PILOT.

One of the youngest of the British pilots is Marcus D. Manton, who, taking up engineering after he left school, only stayed with the firm in Sheffield by whom he was engaged, until he had attained the age of eighteen, the minimum age at which a pilot's certificate can be secured. He joined the Grahame-White school on March 11th of last year, and after only 3 hours 52 minutes practice in the air he made the qualifying flights for his pilot's certificate on a Howard Wright biplane on June 1st. Three days later he was in possession of his ticket. He then spent six weeks in the Grahame-White works, and picked up a deal of very useful information, and on July 15th was engaged by the firm as a pilot. Although very little was heard of him at the time, he did a lot of very steady and useful flying, and so gained an accumulation of valuable experience which stands him in good stead now. His first cross-country flight was to Farnborough on March 3rd of this year, when he delivered a Grahame-White biplane to the R.A.F. The journey took 1 hr. 20 mins., and he kept at a height of

about 5,000 ft. A fortnight later, he started to fly a 70 h.p. Grahame-White machine to Farnborough, when he had his only smash. It was the day of Lord Wolseley's funeral, when it will be remembered it was very foggy, but as the fog seemed to be lifting he determined to start. He, however, ran into a thick bank of fog, and, as he did not care for dodging chimneys and church spires, he decided to land. In order to avoid some trees, he had to come down *piqué*, and flattened out well, but in running along the ground one of the skids caught a head of mud, and caused the machine to turn over on to its back. Manton and his passenger were thrown clear of the machine, and, considering everything, very little damage was done. The machine was repaired on April 20th, and Manton then took it over to Farnborough without mishap. Apart from the 50 h.p. and the 70 h.p. Grahame-White biplanes, Manton flies equally well the Sommer, Howard Wright, Henry Farman, and Maurice Farman biplanes.

"THE HAWK."

OUR FULL PAGE PORTRAITS.

IN response to many requests, we publish below a list in alphabetical order for each year, with the dates of appearance, of the full-page portraits which have appeared in FLIGHT of Pioneers, Pilot-Constructors, Pilots, &c.

Nearly all these copies are still obtainable from the Publishers, 44, St. Martin's Lane, London, W.C., at 6½d. each, post free, for those published during 1909, 1910, 1911 and 1912. For the current year (1913) the charge is 3½d., post free. These portraits form a unique collection of prominent men in the World of Flight.

FLIGHT PIONEERS.

Name.	Date Published.	Name.	Date Published.	Name.	Date Published.
CODY, S. F. ...	1909. Sept. 18	LORAINÉ, Robert ...	Sept. 17	HAMEL, Gustav ...	April 1
MCCLEAN, Frank ...	Dec. 18	MCCARDLE, W. E. ...	Nov. 26	HEWLETT, Mrs. Maurice ...	Aug. 26
MOORE BRABAZON, J. T. C. ...	Nov. 6	MAXIM, Sir Hiram S. ...	Mar. 12	MOORHOUSE, W. B. R. ...	Oct. 14
ROLLS, Hon. C. S. ...	Nov. 13	MOISANT, John B. ...	Aug. 27	MORISON, O. C. ...	Jan. 21
BARNES, G. A. ...	1910. Sept. 24	OGILVIE, Alec ...	Sept. 10	PIXTON, C. H. ...	May 6
BOYLE, Hon. Alan ...	July 23	PAULHAN, Louis ...	Jan. 22	PORTE, Lieut. J. C., R.N. ...	Dec. 9
CLEMENT, A. ...	Oct. 22	RADLEY, James ...	Aug. 20	PRIER, Pierre ...	April 22
COLMORE, G. C. ...	Dec. 10	ROE, A. V. ...	Jan. 29	SAMSON, Lieut. C. R., R.N. ...	Oct. 7
DICKSON, Bertram ...	July 16	SINGER, Mortimer ...	Jan. 15	SANTONI, D. Lawrence ...	Dec. 9
DREXEL, J. Armstrong ...	July 30	SOPWITH, T. O. M. ...	Dec. 3	STOCKS, Mrs. C. de Beauvoir ...	Nov. 18
DUNNE, J. W. ...	Sept. 3	ASTLEY, H. J. D. ...	1911. Mar. 25	VALENTINE, James ...	June 24
FARMAN, Henry ...	Feb. 12	BARRINGTON-KENNETT, Lt. B. H. ...	Sept. 16	WATKINS, Lieut. H. E. ...	Feb. 4
GIBBS, Lancelot D. ...	Aug. 13	BLONDEAU, G. ...	Sept. 23	WEYMANN, C. T. ...	July 8
GILMOUR, D. Graham ...	Oct. 29	CONNEAU, Lieut. ("Beaumont") ...	July 15	WOOD, Capt. H. F. ...	Feb. 18
GRACE, Cecil ...	July 9	CONNER, Lieut. D. G. ...	Mar. 4		1912.
GRAHAME-WHITE, C. ...	April 30	DUCCROQ, Maurice ...	April 29	HERVEU, Mdme. Jane ...	Jan. 6
LADOUGNE, Emile ...	Oct. 15	FULTON, Capt. J. D. B., R.F.A. ...	Dec. 23	HEWITT, Vivian ...	May 4
		GRESWELL, C. H. ...	Feb. 25	LONGMORE, Lieut. A. M., R.N. ...	April 20
				SALMET, Henri ...	Mar. 16

MEN OF MOMENT IN THE WORLD OF FLIGHT.

NORTHCLIFFE, Lord ...	1911. Aug. 5	COANDA, M. ...	May 24	MERRIAM, F. Warren ...	July 19
ARBUTHNOT, Maj.-Gen. H. T., C.B. ...	Nov. 23	CODY, S. F. ...	Feb. 1	PAGE, F. Handley ...	Mar. 1
GLAZEBROOK, Dr. R. T., C.B. ...	Nov. 16	DUNNE, J. W. ...	Feb. 15	PATERSON, Compton C. ...	Aug. 23
HENDERSON, Brig.-Gen. D. C. B. ...	Nov. 9	DYOTT, G. M. ...	June 14	PERRIN, Harold E. ...	Jan. 11
HOLDEN, Col. H. C. L., C.B. ...	Nov. 2	ENGLAND, E. C. Gordon ...	April 19	PICKLES, Sydney ...	Aug. 2
NORTHCLIFFE, Lord ...	Nov. 30	EWEN, W. H. ...	May 10	PIXTON, C. Howard ...	July 5
O'GORMAN, Mervyn, C.B. ...	Dec. 28	FLANDERS, L. Howard ...	Mar. 29	PIZEY, Collins P. ...	July 26
PAINE, Capt. G. M., M.V.O., R.N. ...	Dec. 14	GRAHAME-WHITE, Claude ...	Jan. 18	PORTE, Lieut. J. C. ...	May 3
ROSE, the late Sir Charles D. ...	Oct. 19	HAMEL, Gustav ...	June 21	RADLEY, J. ...	April 12
RUCK, Maj.-Gen. R. M., C.B., R.E. ...	Oct. 26	HAVILLAND, G. de ...	Feb. 22	ROE, A. V. ...	Jan. 25
SYKES, Maj. F. H. ...	Dec. 21	HAWKER, H. G. ...	July 12	SANTONI, D. Lawrence ...	April 26
WHITE, Sir George, Bart., LL.D. ...	Dec. 7	HEWLETT, Mrs. Hilda B. ...	June 7	SIPPE, Sidney V. ...	Aug. 30
BLACKBURN, R. ...	1913. May 17	HUCKS, B. C. ...	June 28	SLACK, Robert B. ...	Aug. 16
BLONDEAU, Gustave ...	June 7	KOOLHOVEN, S. F. W. ...	May 31	SOPWITH, T. O. M. ...	Feb. 8
		LANCHESTER, F. W., M.I.C.E. ...	Jan. 4	THOMAS, G. Holt ...	Mar. 8
		MCCLEAN, Frank K. ...	Mar. 15	TURNER, Lewis W. F. ...	Aug. 9
		MANNING, W. O. ...	Mar. 22	WRIGHT, Howard T. ...	April 5

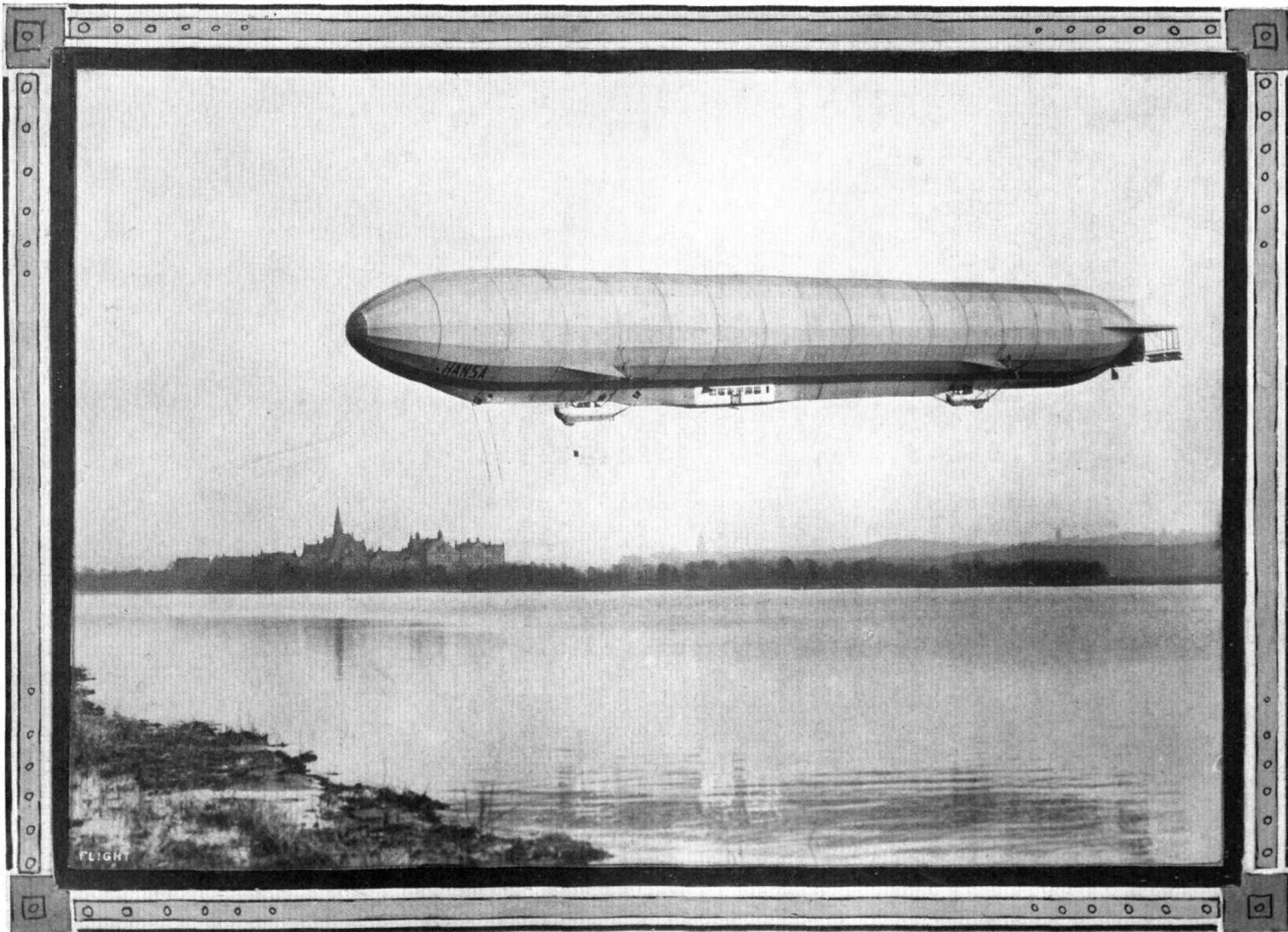
Glenn Curtiss at Brighton.

CONSIDERABLE interest has been aroused by the arrival of the Curtiss flying boat at Volk's waterplane station at Brighton, and Mr. Curtiss, in conversation with us at the beginning of the week, expressed the opinion that the sporting side of waterplaning would soon be taken up as much in this country as in America. John D. Cooper, an Englishman, who secured his pilot's certificate at the

Curtiss School in America, is to pilot the machine at Brighton. Before returning to the U.S.A., in order to be present at the hearing of the fourth stage of the Wright patent litigation, Mr. Curtiss arranged for the British rights in his machine to be taken over by Mr. E. Bass, who learnt to pilot the machine in America, and we understand that Lieut. Porte, R.N., will also be associated with the Curtiss machine in England.

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The Hansa dirigible at Potsdam in which Sir John and Lady Shelley recently made two trips.

A NEW BOOK ON AVIATION.

THE shelf devoted to aeronautical literature in the bibliophile's library is already filled to overflowing with books of every size and description, but, judging from the applications that we so frequently receive for a treatise on aviation that shall be at once popular and technically instructive, we imagine that there is still a considerable demand for yet another volume. Apparently, Messrs. Methuen are also of the same opinion, for they have just published a work under the title of "Aviation," which has been written by Mr. A. E. Berriman, who was technical editor of this journal from the time of its foundation until his recent appointment to the post of Chief Engineer to the Daimler Company. In the course of some 350 pages the author endeavours to explain in straightforward language the why and wherefore of the aeroplane and its constructional features. It is a book that arrives opportunely, for the public interest is at its zenith, and we may even express the hope that a book of this description, perused during leisure hours on winter evenings, may to some extent prevent a relapse into the apathy from which it has been so difficult to awake the public mind.

There is an interesting originality about the general "make up" of "Aviation" that should appeal to the reader who is approaching the science of the subject for the first time. Instead of being placed first, the historical section is placed third, after the objects that the pioneers sought to attain have been fully explained by reference to the modern machine and its accomplishments. Thus, the "milestones" of aviation's history are made more interesting inasmuch as their significance is more readily understood.

The wide scope of these earlier explanatory chapters is sufficiently described by reference to their headings, among which are:—What an aeroplane is, the instructiveness of paper models, constructional features, equilibrium, lateral balance, steering, longitudinal stability, propulsion, resistance, and the cambered wing. It will be observed that at least the author has not shirked the task of giving to the real problems of aviation the importance and

space that is their due in a book of this description. Similarly, the historical section, which is brought up to February of this year, is preceded by a section containing special chapters on the work of Lilienthal, Wright, Voisin, Farman, Dunne and Weiss. In this section also are to be found chapters on the Military Trials of 1912, Hydro-aeroplanes, and Accidents. In this last there are descriptions of some really sensational escapes, which properly deserve to go down to history in connection with the present period of flying.

Quite one of the most important and attractive features of the book is its wealth of pictorial relief. Photographs and sketches abound everywhere, and they have been selected with care from that inexhaustible storehouse provided by the pages of FLIGHT. As the author says in his preface, "The pictures in this book are a few of the many hundreds that are prepared in the usual course by the staff of FLIGHT, and are typical of the illustrations that appear in that journal every week. It is, of course, on the periodical that the reader who would remain *au fait* with current development must necessarily rely for immediate information, and if this book succeeds in assisting those who read it to follow the later stages of this new movement with greater interest and appreciation of detail, it will have served its purpose well."

With that sentiment we can thoroughly agree, and equally we can assure our readers that the book itself is an honest attempt to achieve its purpose, and as such is worthy of their notice.

Not only to the general reader, but to the student also, "Aviation" is designed to make appeal. There is a fourth section, not mentioned in the above remarks, containing appendices that could not properly be included in the body of the text. As the section in question represents over 100 pages of matter, and includes a number of numerical examples that have been worked out in full, it is an appendix of somewhat more than the usual significance. The last few pages are devoted to tabulated data, some of which is not readily to be found elsewhere.



A COSMOPOLITAN GROUP AT THE FARMAN SCHOOL, ETAMPES.—Reading from left to right: Messrs. F. D'Or and R. Bagnot (both French), Lieut. Lugin (Swiss officer), Gougenheim (chief pilot), Rougerie (Director), H. Montalvon (Spanish), and J. W. Madeley (English).

The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

Committee Meeting.

A MEETING of the Committee was held on Tuesday last, the 14th inst., when there were present:—Col. H. C. L. Holden, C.B., F.R.S., in the Chair, Mr. Griffith Brewer, Mr. Ernest C. Bucknall, Mr. G. B. Cockburn, Prof. A. K. Huntington, Mr. F. K. McClean, Mr. Alec Ogilvie, Mr. Mervyn O'Gorman, C.B., Mr. C. F. Pollock, Com. C. R. Samson, R.N., Mr. T. O. M. Sopwith, and the Secretary.

New Members.—The following new Members were elected:—O. K. Backler, Lieut.-Col. N. J. G. Cameron, Bernard Howard, Sir Bryan B. M. Leighton, Bart., Edward Stronach and Vincent Waterfall.

Aviators' Certificates.—The following Aviators' Certificates were granted:—

- 638. Capt. Geoffrey Henry Cox (S.R.) (Blériot Monoplane, Blériot School, Hendon). Sept. 27th, 1913.
- 639. Frank Bernard Halford (Bristol Biplane, Bristol School, Brooklands). Oct. 2nd, 1913.
- 640. E. R. A. William Badley (Short Biplane, Naval School, Eastchurch). Oct. 3rd, 1913.
- 641. Sir Bryan B. M. Leighton, Bart. (Grahame-White Biplane, Grahame-White School, Hendon). Oct. 3rd, 1913.
- 642. Michael Sullivan Keogh (Carpenter, R.N.) (Short Biplane, Naval School, Eastchurch). Oct. 4th, 1913.
- 643. Ivan Beauclerk Hart-Davies (Grahame-White Biplane, Grahame-White School, Hendon). Oct. 6th, 1913.
- 644. Capt. George Henderson, I.A. (Bristol Biplane, Bristol School, Brooklands). Oct. 7th, 1913.
- 645. Lieut. Roger Montague Boger, R.F.A. (Bristol Biplane, Bristol School, Brooklands). Oct. 8th, 1913.
- 646. Christopher Draper (Grahame-White Biplane, Grahame-White School, Hendon). Oct. 9th, 1913.
- 647. Lieut. Ennis Tristram Ratcliffe Chambers, R.N. (Maurice Farman Biplane, Central Flying School, Upavon). Oct. 9th, 1913.
- 648. Lieut. Gerard Lowndes Edward Sherlock (3rd K.O. Hussars) (Vickers Biplane, Vickers School, Brooklands). Oct. 9th, 1913.
- 649. Lieut. Charles Bennett Spence, R.F.A. (Bristol Biplane, Bristol School, Brooklands). Oct. 13th, 1913.

The following Aviator's Certificate, taken in America, was passed:—Lindop E. Brown.

Mr. C. Gordon Bell.—Mr. C. Gordon Bell attended before the Committee in connection with his accident at Brooklands on June 13th last, and the Chairman, after pointing out how desirable it was, in the public interest, that all aviators should exercise every care and judgment in flying on all occasions, cautioned him particularly as regards his flying in future.

Aero Exhibition, 1914.—The Society of Motor Manufacturers and Traders has notified the Club that it will organise an International Aero, Marine, and Engine Exhibition at Olympia on March 16th to 21st, 1914. Full particulars will appear later.

British Record: Pilot and Nine Passengers.—The report of flight made by Louis Noel, with nine passengers, at Hendon, on October 2nd, 1913, was considered, and it was decided to accept the flight of 19 mins. 47 secs., as a British duration record for pilot

and nine passengers. The aircraft used was a Grahame-White Biplane fitted with a 120 h.p. Austrian Daimler engine.

It was further decided to submit this flight to the Fédération Aéronautique Internationale for confirmation as a World's Record.

The Late Mr. S. F. Cody.—The following donations have been sent to the Royal Aero Club on behalf of the family of the late Mr. S. F. Cody:—

	£	s.	d.
Mrs. B. Inglis Marriott	20	0	0
Officers of the 3rd and 4th Squadrons of the Royal Flying Corps, Netheravon	13	10	0
W. Oswald Watt	5	0	0

Public Safety and Accidents Investigation Committee.

A meeting of the Accidents Investigation Committee was held at the Royal Automobile Club (by kind permission), on Monday last, the 13th inst., when there were present:—Col. H. C. L. Holden, C.B., F.R.S., in the Chair, Mr. A. E. Berriman, Eng.-Lieut. E. F. Briggs, R.N., Major J. D. B. Fulton, R.F.A., Mr. W. O. Manning, Mr. Alec Ogilvie, Major-Gen. R. M. Ruck, C.B., R.E., Com. C. R. Samson, R.N., and the Secretary.

Fatal Accident to Major G. C. Merrick at Upavon.—The Committee proceeded to enquire into this accident, which took place at Upavon on Friday, October 3rd, 1913. The report of the Club's representatives who were on the spot within a short time of the occurrence, together with the evidence of eye-witnesses, was received. Mr. Horace Short, of Messrs. Short Bros., attended and produced plans of the aircraft and gave evidence on various points raised by the Committee. The report was drawn up and ordered to be submitted to the Executive Committee.

Mr. F. Lanchester attended the meeting and gave the Committee an interesting statement as regards the technical aspect of aeroplanes capable of flying upside-down as well as in the ordinary position.

Competitions Committee.

A meeting of the Competitions Committee was held on Tuesday last, the 14th inst., when there were present: Col. H. C. L. Holden, C.B., F.R.S., in the Chair, Mr. F. P. Armstrong, Mr. E. C. Bucknall, Mr. G. B. Cockburn, Prof. A. K. Huntington, Mr. Alec Ogilvie, and the Secretary.

Daily Mail £5,000 Race, 1914.—The Committee discussed the regulations for the Race for next year. Although the date has not yet been definitely fixed, it will be somewhere about July or August. The complete aircraft and all its parts, including the motor, must have been constructed within the confines of the British Empire, but this provision shall not be held to apply to raw material. The entrant and pilot or pilots must be British Subjects.

The full regulations will be issued shortly.

Mr. H. G. Hawker.

Mr. H. G. Hawker, who met with an accident at Brooklands last week, has now recovered. He visited the Club on Tuesday last, and is quite fit again.

British Empire Michelin Competition £500.

Intending competitors are reminded that the closing date for this Competition is October 31st, 1913. Full particulars can be obtained on application to the Club.

166, Piccadilly, W.

HAROLD E. PERRIN, Secretary.

FROM THE BRITISH FLYING GROUNDS.

Royal Aero Club Eastchurch Flying Grounds.

H.M. AIRSHIP "Delta" appeared over the aerodrome at Eastchurch on Friday last week, and, with the sun shining brightly on the envelope, made an imposing spectacle. She was cruising at no great height, the name being clearly discernible.

Eng.-Lieut. Briggs, R.N., on a Blériot monoplane, quickly joined her in the air, and then a fine spectacular sight was witnessed. The quick, graceful motions of the Blériot compared with the more laborious movements of the "Delta" were clearly shown, the monoplane repeatedly passing over and about her with consummate ease, and absolutely out-manoeuvred her. The "Delta," accompanied by the Blériot, made off in the direction of Sheerness, where she sailed over the town, and the escort was further reinforced by the addition of two seaplanes from the Isle of Grain hydroplane station.

Mr. Sippe, the Bristol pilot, made a flight of short duration on Saturday afternoon on a new 80 h.p. Gnome-engined biplane. No

attempt was made to perform the necessary Admiralty acceptance tests, as the weather was very bad. The machine is of the ordinary Bristol design, and the workmanship is particularly nice.

The weather conditions have not been very favourable for flying during the week, but the Naval pilots have been busy at every opportunity, and all the usual aviators have been out on several occasions, on Shorts, Deps., Blériot, Avro, Sopwith, Caudron, &c.

Mr. McClean has been out on his large S. 38 type machine.

Brooklands Aerodrome.

ON Saturday there was no flying in the afternoon owing to the heavy rain.

On Sunday morning Mr. Gordon Bell set off for Eastchurch on a Sopwith tractor biplane for delivery to the Admiralty. In the afternoon there was some interesting flying, Mr. Merriam being out early on the Bristol biplane, followed by Mr. Pixton on another Bristol machine. Messrs. Orr Paterson and Knight were out on

Vickers machines. Mr. Dukinfield Jones was flying well on the Flanders biplane, and excellent tests were made on the Martinsyde monoplane. The winner of the ballot for the free flight, Mr. C. Rippington, of Abingdon, Berks, was taken up by Mr. Merriam on the Bristol biplane. A number of passengers had flights on Bristol and Vickers machines.

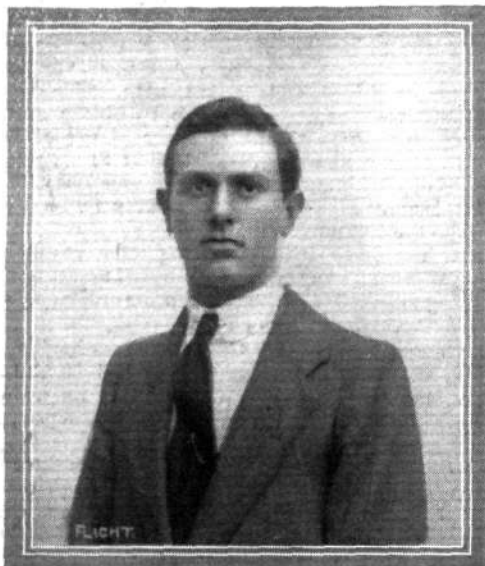
Bristol School.—On Monday last week, Merriam test, but found too foggy. Cleared later, and Capt. Henderson alone for three flights, doing straights, figures of eight, and landing near a mark. Lieut. Warren followed, doing figures of eight at 400 ft., making a half spiral *vol plané* landing. Merriam behind Lieut. Robertson on straights and circuits, afterwards with Lieut. MacNeece and Capt. Wallace on straights and circuits. Mr. Boger made very good figures of eight, landing perfectly.

In the afternoon Merriam for a test, taking Capt. Wallace as passenger, and found a bit bumpy, later with Lieuts. MacNeece and Ames on straights for landing practice, Capt. Henderson and Lieut. Warren a short solo each in a puffy wind. Merriam a solo to sheds.

Rain first thing on Tuesday, cleared at 11.15 a.m. Merriam tested conditions, and found all right. Capt. Henderson then took his certificate in excellent style, landing on the mark. Too windy in the afternoon and evening for flying.

Flying impossible owing to wind and rain on Wednesday.

On Thursday, Merriam first out testing, then up behind Capt. Wallace on straights. Afterwards sent Mr. Boger for his ticket, which he obtained in excellent style, flying very steadily and landing



Mr. W. Watts, who recently took his *brevet* in excellent style on a Caudron biplane at the W. H. Ewen School, Hendon.

near to the observer. Merriam with Captain Wallace (twice), Lieut. MacNeece (twice) and Mr. Finny—a new pupil—(twice). Lieut. Warren finished with a good solo to sheds. In the evening, Merriam testing, Pixton also testing, Merriam then up with Capt. Wallace (twice), Lieuts. Hinds and MacNeece, and Pixton up with Capt. Wallace. Lieut. Warren a solo with *vol plané* landing. Merriam finished with a solo in the dark.

Merriam first out on Friday with Mr. Finny, and later with Capt. Wallace, Lieuts. Robertson and MacNeece. Pixton, with Lieut. Hinds and Mr. Finny. Lieut. Warren a short solo, as it was too windy for a longer one. Merriam gave Lieut. Robertson a trip in a puffy wind to finish up. In the evening Pixton for test then up with Capt. Wallace, Lieuts. Hinds and Warren, and Mr. Finny. Too bumpy for pupils alone.

On Saturday, raining and windy all day, flying out of the question.

Howard-Flanders School.—Monday, last week, Dukinfield Jones up in morning for 20 mins., and again later for about 25 mins. On Friday, he was out in morning for about 45 mins., reaching 2,300 ft., also in very bumpy wind in evening, and on Sunday made three short flights of 10 mins. each during afternoon.

Vickers School.—Monday morning last week, Barnwell on biplane 21 with Messrs. Malcolm and Batty-Smith. Knight, Paterson, and Barnwell on biplane 20, with Messrs. Kinsman, Batty-Smith, and Malcolm. Messrs. Howell and Sherlock solos. In evening Paterson and Knight on biplane 20 with Messrs. Kinsman, Frankland, Batty-Smith, and Malcolm. Knight on biplane 21 with Capt. Truman, new pupil.

In forenoon, Tuesday, Paterson test on biplane 20, then with Capt. Frankland. Wind very bumpy.

Thursday, Knight testing biplane 20, and then with Messrs. Batty-Smith, Pierson, Frankland, Malcolm and Truman. Paterson, with Messrs. Pelham, Frankland, Kinsman, Malcolm, and Batty-Smith. Captain Wood, on biplane 21 solo, and with passenger. Messrs. Sherlock and Howell solos on biplane 20. Paterson on biplane 21 with Messrs. Pelham and Batty-Smith. Mr. Sherlock for *brevet* getting through in fine style on biplane 20.

Knight on biplane 20 with Messrs. Frankland, Malcolm, Kinsman and Pierson Friday morning. Paterson on biplane 21 with prospective pupil. Wind getting very bumpy.

London Aerodrome, Collindale Avenue, Hendon.

Grahame-White School.—Mr. L. C. Kidd solo straights, Monday, last week. Mr. Van Segebaden, Mr. Eldridge Green, Mr. Lillywhite, Mr. Cripps and Mr. Draper all doing straights with Instructor Manton or Birchenough in passenger seat. Mr. Kidd and Mr. Draper afterwards doing circuits. Mr. Hart-Davis solo circuits, and right handed turns, afterwards going in for his *brevet* tests, making fine landings, and gaining pilot's certificate.

Thursday, Mr. Lillywhite and Mr. Francis straights with Instructor Manton in passenger seat. Mr. Draper and Mr. L. C. Kidd circuits, Mr. Draper afterwards going in for his *brevet* tests and gaining his pilot's certificate.

W. H. Ewen School.—On Monday, last week, school out at 4.30 p.m. On 35 h.p. Caudron No. 2, M. Baumann instructing Capt. Jennings, who was doing half circuits, Lieut. Holbrow half circuits and circuits; Capt. Jennings also doing circuits and right-hand turns. On No. 1, Mr. F. Goodden instructing Messrs. Badgery and Cowling, who were rolling, and Mr. Scott who was doing straights.

No further practice could be got in till Thursday, when the pupils were out at 6 a.m. Mr. F. Goodden made a test flight on the 35 h.p. Caudron No. 2, after which Capt. Jennings did circuits and Lieut. Holbrow half circuits. On No. 1, Mr. Badgery was rolling and doing short straights, Lieut. Fraser doing straights and Mr. Scott straights. During the afternoon Mr. F. Goodden made some exhibition flights.

Hall School.—Monday, last week, bad wind. Hall made circuits. Tuesday same. On Wednesday, Hall flying biplane. Next day, Scotland figure eights in good style; Hall exhibits. Friday, W. H. Scotland started for *brevet*, but had to give up before completion of first five eights owing to rising mist, and wisely decided to postpone it till next fine day. Saturday, rained all day.

Salisbury Plain.

Bristol School.—Weather too bad for flying on Monday morning last week. In the evening Sippe, on tractor biplane, taking Mr. Voigt and Lieut. Dunn for short flights in a 15 to 20 m.p.h. wind.

Weather unfit for flying all day Tuesday, Wednesday, Thursday and Friday.

Rain cleared on Saturday towards the latter part of the afternoon, and Jullerot went for a trial on a school biplane, afterwards for a long flight on one of the new tractor biplanes. Then gave tuition to Lieuts. Dunn and Harrison, giving each pupil three flights each. Capital solos by Capt. Buckland and Mr. Voigt. Wind prevented further flying.



Aeronautics in German Army.

FROM October 1st the aeronautic troops of the German Army are divided into two distinct corps, one giving its attention solely to lighter than air craft, while the other will deal with aeroplanes. Each corps will be commanded by an inspector of the rank of Lieutenant or Brigadier-General. The aviation corps is divided into four battalions, of which the first is divided between Doeberitz, Zeithayn and Juterborg, the second between Posen, Grandenz and Koenigsburg, and the third between Cologne, Hanover and Johannisthal. The fourth battalion has not yet been allocated. The airship and balloon corps will be made up of five battalions, the first being stationed at Berlin, the second being divided between Berlin, Hanover and Dresden, the third between Cologne, Dusseldorf and Darmstadt, the fourth between Mannheim, Metz, Lahr and Friedrichshafen, and the fifth between Koenigsburg, Grandenz and Schneidemuhl.

Stability Tests with a Caudron.

A NOTE from Crotoy states that during some tests made by Galtier with a Caudron biplane on Monday, he several times, when making sharp turns, had the machine banked past the vertical, but each time the machine dived and recovered its stability.

OCTOBER 18, 1913.

FLIGHT



AN EVENING FLIGHT AT BROOKLANDS.—A turn on the Sopwith tractor.

FLYING AT HENDON.

It looks very much as though the words "weather permitting" will have to be deleted from the Hendon programmes, for although the rain effectually prevented the usual meeting from taking place last Saturday, it did not stop Louis Noel making a flight. Hendon's reputation for not having missed a Saturday's flying this season was thereby saved. Noel went up in the Maurice Farman, accompanied by Capt. Tyrer, and made five circuits of the aerodrome, finally getting lost in the mist and effecting a safe landing, but not without difficulty. This was not the only flight made that day, however, for about noon Lieut. R. A. Merax, R.N., arrived from Eastchurch on an 80 h.p. Caudron biplane, having had great trouble in finding his way in the rain.

Sunday was as fine as Saturday was bad, with the result that a really very good afternoon's flying was witnessed by a large attendance. From three o'clock until dusk about a dozen machines and as many pilots put up flight after flight. Quite a large number of visitors made passenger flights, several of these going in the 120 h.p. char-à-bancs, which was piloted by Louis Noel. Unfortunately this large machine will not be able to continue its useful work at passenger carrying for some time, as it was placed *hors de combat*, after several successful flights, by the breaking of the crankshaft just after it had started off for a flight. The engine was pretty badly punished, but except for a chipped propeller no

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"Under the White Ensign."

"I WONDER how long it will be before our artists 'discover' the dirigible as something quite as artistic as a thatched cottage or a young lady insufficiently clad. It took them well on sixty years to find out that a modern battleship has more colour, poetry, and mystery than any old 'white wings' business. Some day the dirigible also will come into its own."

further damage was done. W. Birchenough, R. H. Carr, and Marcus D. Manton were very busy all the afternoon taking up passengers on the three 50 h.p. G.-W. 'bu-es. Manton also made some very fine solo flights at a great altitude, descending with steeply banked spirals. The three speedy Morane-Saulnier monoplanes were out, Gustav Hamel and R. Slack piloting 80 h.p. models, and taking up passengers, whilst Philippe Marty piloted a 50 h.p. type.

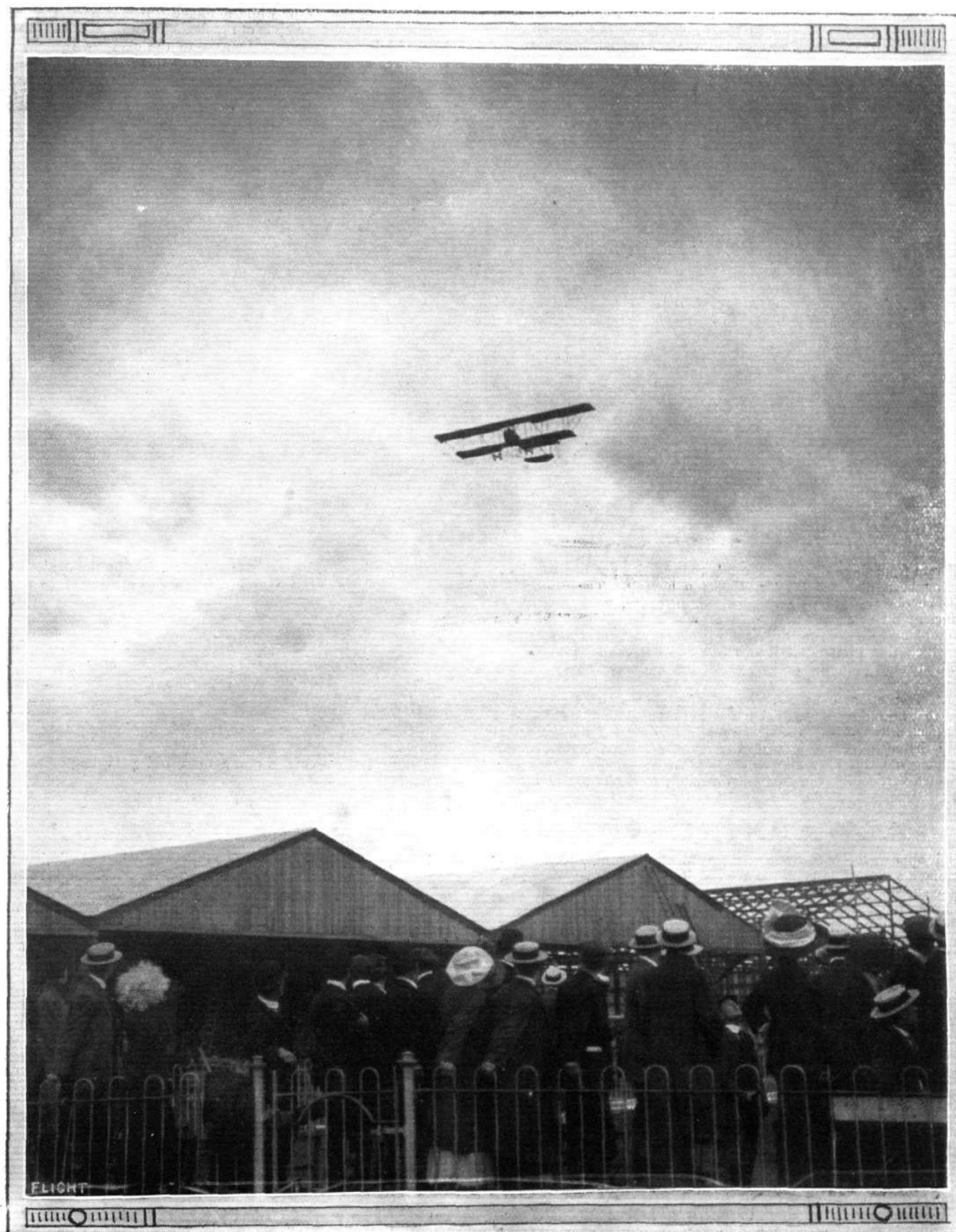
Later in the evening Hamel, accompanied by a passenger, reached an altitude of 6,000 ft. One of the star turns of the afternoon, however, was a splendid high flight by F. W. Goodden—who was, no doubt, "elevated" on account of his biography appearing in the programme—on the 35 h.p. Scotch-built Caudron. He remained aloft for 1½ hours and reached an altitude of 5,000 ft., a very creditable performance on the part of both man and machine. E. Baumann on the 60 h.p. Caudron also put up some good flying. B. C. Hucks and W. L. Brock were equally busy all the afternoon on their 80 h.p. and 50 h.p. Blériots respectively. A Maurice Farman, apparently trying to turn upside down, indicated that Pierre Verrier was also one of those contributing towards the afternoon's entertainment, whilst to complete our notes it should be mentioned that Claude Grahame-White also made a flight, and that on several occasions during the afternoon over half-a-dozen machines were in the air at the same time.

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"These remarks are written just after the Astra-Torres—'Naval Dirigible No. 3'—has passed through what the lawyers and Form IV. teach me is 'my bit of air.' She came up against the sun, flying low, a thing of blue and gold, with a grey sky behind her. There were sheens of rose and emerald, and all the novel glory of the air-way. A commonplace-looking yellow thing, really; but what are the clouds of sunset, save shapeless lumps, if only the atmosphere did not transform them."—Fred T. Jane, in the *Evening Standard*.



The Army airship "Delta" passing over a garden in Hampstead on Friday, October 10th. From an original drawing by Roderic Hill.



"Flight" Copyright

Pierre Verrier making a passenger flight at sunset on the Maurice Farman biplane at Hendon Aerodrome.

THE EGGLETON GLIDER.

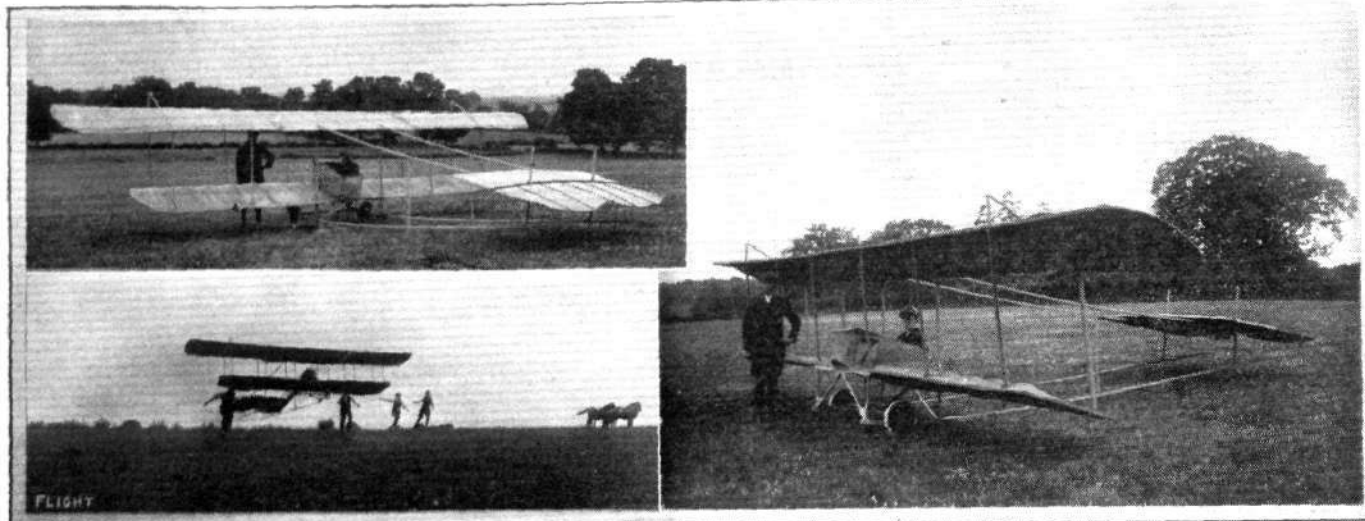
THE accompanying photographs illustrate a glider which has been built by Mr. R. H. Eggleton, of Eastleigh, Hants, and with which, we understand, numerous successful glides have been made.

It will be noticed that the glider somewhat resembles the well-known Caudron biplanes, especially with regard to the arrangement of the nacelle, tail booms and tail plane. The wings are quite

ment, operates the warp, while a to-and-fro motion of the lever controls the elevator, which is of the flexing type.

Four tension springs secure the axle to the skids of the chassis, and thus act as shock absorbers instead of the rubber rings usually employed for that purpose.

Over one hundred flights have been made, we learn, with this



Three views of the Eggleton glider.

different from those of the Caudron both in section and construction, having been designed by Mr. Eggleton himself. The camber, it will be observed, is very pronounced, in order, no doubt, to get sufficient lift at the slower speed at which the glider flies. The main planes, the chassis and the tail booms each form separate units, of which that of the tail booms is made detachable in order to facilitate storage in the hangar, which has a doorway only ten feet wide.

An inspection of the accompanying photos will reveal the fact that no rudder is fitted, as it has been found that steering can be effected by means of the elevator, which is warped in conjunction with the main planes in a similar manner to that employed for carrying out this operation in the Caudron machines. A centrally pivoted vertical lever in front of the pilot, by a side to side move-

ment, operates the warp, while a to-and-fro motion of the lever controls the elevator, which is of the flexing type.



Sketch of wing construction of Eggleton glider.

found difficult to secure the use of a hill providing a suitable gradient.

A WARNING TO WOULD-BE "PEGOUDISTS."

As it appears likely that one or more British pilots may be contemplating a series of tests on the lines of, if not of such magnitude as, those successfully essayed by M. Pegoud on his Blériot monoplane, in order to demonstrate the stability of their particular machine, a few words, drawing attention to a fact which, we believe, is not so generally realised as it should be amongst pilots, may prove useful.

When marvelling at the evolutions carried out by that daring aviator, it should be borne in mind that these evolutions were executed on a machine which was not only specially fitted with a greatly increased range of warp and great rudder and elevator movement, but also possessed that standard Blériot feature, *i. e.*, the open fuselage, which makes machines of that make respond with great promptitude to the directional controls. It is to this point that we should like to direct the attention of pilots. When a machine with a fuselage, which is very deep and very wide in front, and which is entirely covered in, is dived beyond a certain angle, and thereby given a velocity far above its normal flying speed, it has been found to be very sluggish in answering the elevator for the purpose of flattening out after the dive. It has been suggested that the reason for this might be, that in a machine with a fuselage of this type, the tail planes at high speed are working in a partial vacuum, which renders them inefficient. If this were the case the pilot would have the impression that his control wires were broken, as his control lever would move backwards and forwards with great ease, and with no appreciable effect on the machine.

An experience, which one of our well-known pilots had recently, appears to disprove this assumption. He dived his machine until a very high velocity had been attained, and, on trying to flatten out, found that he had to pull very hard on his elevator lever, bringing it back as far as it would go, and even then the machine only very

slowly responded to the elevator. Fortunately he had climbed to a good height before starting the dive, and thus had ample room to drop before flattening out.

The fact that the elevator in this machine was difficult to raise seems to indicate that the top and bottom surfaces of an enclosed fuselage act at high velocities as a very effective damper plane which, in connection with the fixed tail plane, tend to overcome the effect of the elevator.

An evolution like that of looping the loop must of necessity be done in a comparatively small circle in order to bring the machine over the top of the curve, and it must be done at a high velocity for the same reason. Pilots who intend to put their machines through a series of tests of this order should therefore remember, that a machine which has an enclosed fuselage, whilst perfectly controllable in all positions in which a pilot is likely to find himself for ordinary flying, may prove to be sluggish on the controls at very high velocities, such as Pegoud's tests entail. The pilots should at any rate convince themselves, by a series of dives of which each one is a little steeper than the preceding one, that their machines do answer the controls with the necessary promptitude.

An American Aerial Derby.

AN "aerial Derby" was successfully carried out on Tuesday last over a 60-mile course round the Manhattan Island, New York. The result was a victory for Curtiss biplanes, which finished first and second, W. Luckey piloting the winner in 53 mins. 6 secs., and Miles the second in 55 mins. 5 secs. The third place went to a Moisant monoplane, with Marvin Wood at the wheel, which finished in 58 mins. 19 secs.

DETERMINING POSITION AT SEA.

By "DOVORIAN."

A PARAGRAPH which appeared in FLIGHT some little time ago under the heading "Determining Position at Sea," calls, I think, for comment, as it tends to give a wrong impression of the accuracy with which the position of an aeroplane may be determined at sea. It is quite impossible for even the best navigating officer to determine the position of a ship to *within one quarter of a mile* of its true and actual position on the chart, so that in the case of an aeroplane the difficulties would be even greater.

I am of course presuming that the position has been determined by two observations or "sights" of some celestial body, and not by bearings of points of land, whose positions are already accurately known on the chart.

The conditions under which these observations are made, viz., being "at sea" or being "in the air," personal errors in actually taking the sights and working them by either the "OLD or the NEW NAVIGATION" methods, both of which are equally accurate, do not permit of such accuracy.

Perhaps the chief reasons that preclude any great accuracy in taking "sights" in an aeroplane are:—

1. The tremendous vibration as compared to that on board ship.
2. The height of eye above sea-level (H.E.) must be known to nearest foot, to obtain good results, and this is not easy to obtain accurately in an aeroplane, as the aneroid is a very delicate instrument, and susceptible to the smallest change of atmospheric conditions, which small change would at once render the H.E. wrong by at least 6 ft.

3. At any great height the horizon obtainable would be a very unsatisfactory one.

Probably what Mr. Rainey did was to get an "intercept" of one quarter of a mile in one or the other or both of his observations of the sun, that is to say, the difference between the calculated and the observed Zenith distance of the sun was one quarter of a mile. This does not necessarily mean that the position thus determined was only one quarter of a mile out. On the contrary, it was probably two or three miles out. This sounds a lot, but in practice an intercept of three miles is not considered much out, and the sights obtained to get as close as that would be excellent ones.

The only other explanation is that Mr. Rainey must have been exceptionally lucky in obtaining a couple of magnificent sights in order to get his observed position so close to the actual position of the machine at the time—an occurrence which would be extraordinary in itself, if it happened once in a hundred such observations.

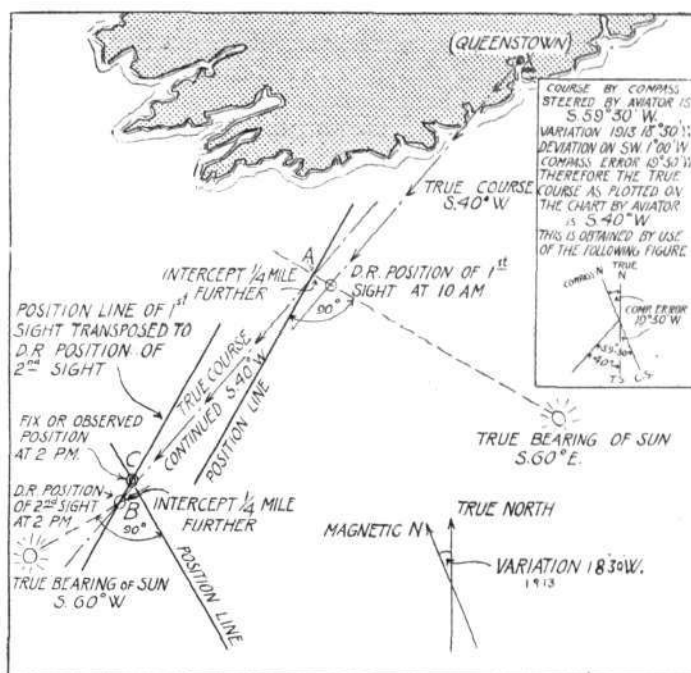
A short description of the procedure of determining one's position at sea might be of interest to readers of FLIGHT.

Let us suppose that an aviator is commencing the "Trans-Atlantic flight" to New York. He leaves the land at X (say Queenstown), and plots his true course S. 40° W., having previously corrected the compass course he is steering (say S. 59½° W.) for Variation, and the Deviation of the compass.

Let us suppose again that the speed of the machine is 50 m.p.h. After flying for four hours and covering 200 miles, he takes his first observation of the sun, and finds its true bearing to be, let us say, S. 60° E. (at 10 a.m.), and on working out the sight he obtains an

intercept of one quarter of a mile "further" from the sun. He plots his true course, true bearing of the sun, and the intercept, on the chart, placing his first position line at right-angles to the true bearing of the sun, and one quarter of a mile from his DEAD RECKONING POSITION at 10 a.m.

Now he knows that he is *somewhere* on the position line, and as he has no other position line until he takes his second sight, he presumes that he is at the position point A. He therefore lays off his course, which remains as before, from the point A *instead* of from the D.R. position. After flying for another four hours and covering another 200 miles, he takes his second sight at 2 p.m. The sun has



now passed the Meridian, and its true bearing is found to be, let us say, S. 60° W. We will now presume that the aviator, on working out his second sight, obtains the same intercept as before (one quarter of a mile "further"), and draws his second position line. Where this second position line intersects the first position line, which has been transposed from the first sight to the D.R. position of the second sight, is the aviator's *FIX* or *position observed by two sun-sights*. This *FIX* is probably four or five miles out.

The aviator then alters his course, as the course which I have started him on would not take him to New York, but was merely chosen for convenience in explanation.

ROYAL FLYING CORPS (MILITARY WING).

OFFICIAL summary of work for week ending October 10th:—

No. 1 Squadron (Airship).—"Beta" "Delta" and "Eta" were each out most days during the week. "Eta" made two good trips on the 6th and 9th respectively. "Delta," piloted by Capt. Waterlow, satisfactorily passed an eight hours' test on the 10th, going to Canterbury, on to the coast, and thence down the coast over Chatham and Sheerness, up the Thames and back to Farnborough, *via* Redhill and Petersfield.

No. 2 Squadron.—Most of the machines are in process of being thoroughly overhauled after their participation in the Irish Command manoeuvres. Capts. Becke, MacLean and Todd, and Lieuts. Dawes and Lawrence have taken over machines at Farnborough. The three first named officers are now on their way to Montrose by air. The remainder will start early next week.

No. 3 Squadron.—The machines of A, B and C flights were out most days throughout the week. On the 3rd the majority of the officer pilots proceeded to Farnborough by air to attend a conference on the work carried out on Army manoeuvres. The work of overhauling machines after manoeuvres was carried on.

No. 4 and 5 Squadron.—The pilots of these squadrons were up on numerous occasions on BE's and Maurice Farmans, but the greater part of the week has been confined to the work of overhauling the aeroplanes after manoeuvres.

Flying Depot.—Experimental work was continued after the break necessitated by manoeuvres.

General News.—A proportion of officers, n.c.o.'s, and men have proceeded on winter leave.

Nos. 3 and 4 Squadrons will move into a completed portion of the new barracks at Netheravon on Monday next.

THE ROYAL FLYING CORPS.

The following appointments were announced by the Admiralty on the 10th inst.:—

Lieuts. A. J. Miley and E. Osmond, to the "Hermes," additional, as Flying Officers for Isle of Grain Naval Air Station, to date October 2nd.

Capt. A. C. Barnby, R.M.L.I., to the "Hermes," as Flying Officer, Isle of Grain Naval Air Station, to date October 2nd.

The following appointments were announced in the *London Gazette* of the 14th inst.:—

R.F.C.—Military Wing.—The undermentioned to be Flying Officers and to be seconded: Lieut. Reginald G. D. Small, the Prince of Wales's Leinster Regiment (Royal Canadians). Dated September 9th, 1913. Lieut. Maurice W. Noel, the King's (Liverpool Regiment). Dated September 11th, 1913. Second Lieut. William C. K. Birch, Alexandra Princess of Wales's Own (Yorkshire Regiment). Dated September 11th, 1913. Lieut. Edward R. L. Corballis, the Royal Dublin Fusiliers. Dated September 13th, 1913. Second Lieut. George F. Pretyman, Prince Albert's (Somerset Light Infantry). Dated September 15th, 1913. Lieut. Gordon Adams, the Prince of Wales's Volunteers (South Lancashire Regiment). Dated September 24th, 1913.

STRESSES IN WINGS.

THE R.A.F. METHOD OF ESTIMATING.

WE are indebted to the Superintendent of the Royal Aircraft Factory, for the information on which the following article is based and for kindly reading the proof thereof. The subject of wing stress calculations is one of first-class importance, and it is well recognised that the problem presents exceptional difficulties. Any really practical method must also be sufficiently simple for use by the average draughtsman, and for this reason some approximative method of estimating is essential in order to avoid the labour and complication of excessive mathematical detail. So that the subject might properly be brought before the notice of readers of FLIGHT we are enabled, through the courtesy of Mr. Mervyn O'Gorman, to give the method employed at the Royal Aircraft Factory, but we hope that constructors in the industry will also supply examples of their own methods for comparison, as it would be well to have the matter thoroughly ventilated at the present time.

In the following article the method, which is printed in italics, is illustrated by an example, which is printed in ordinary type. The example is based on the R.A.F. Aeroplane BE2, of which we reproduce a scale drawing from the Technical Report, Vol. III. The details of wing loading, etc., appear in the course of the calculations. The following method, although worked out specifically for a BE2 biplane, is of course applicable to any similar type of aeroplane, provided care be taken to obtain the necessary data as to air pressure and variation of air pressure distribution with angle of incidence.—Ed.

(1) *Distribution of Load Between the Planes.*—Find the load on the top plane and the load on the bottom plane, allowing for biplane effect, i.e., that lift per sq. ft. on bottom plane is less than that on top plane.

Example. (a) *Effective Area of Surface.*—As the wing tips are curved the equivalent aerofoils are taken as if cut square at the ends but 1 foot shorter than to the extreme tip of the curved wing—

$$\begin{aligned}\text{Area of top plane} &= 192 \text{ sq. ft.} \\ \text{Area of bottom plane} &= 176 \text{ sq. ft.}\end{aligned}$$

(b) *Diminished loading on lower plane.*—From curves of pressure distribution on biplane surfaces it is taken that the ratio—

$$\frac{\text{Lift per sq. ft. of top plane}}{\text{bottom plane}} = \frac{100}{80}$$

Equivalent amount of surface with lift per sq. ft. equal to that of bottom plane = $176 + \frac{192}{.8} = 176 + 240 = 416 \text{ sq. ft.}$

(c) *Distribution of loading.* Total weight of machine = 1,600 lbs. This is divided between top and bottom plane as follows:—

$$\begin{aligned}\text{Total weight supported by lift of top plane} \\ &= \frac{1600 \times 240}{416} = 923 \text{ lbs.}\end{aligned}$$

Total weight supported by lift of bottom plane = 677 lbs.

The weight of the planes is supported directly by the air pressure upon them, so in order to obtain the load on the spars the weight of the planes must be subtracted from the total weight supported.

Total weight of main planes = 220 lbs. Assuming this to be distributed in proportion to area,

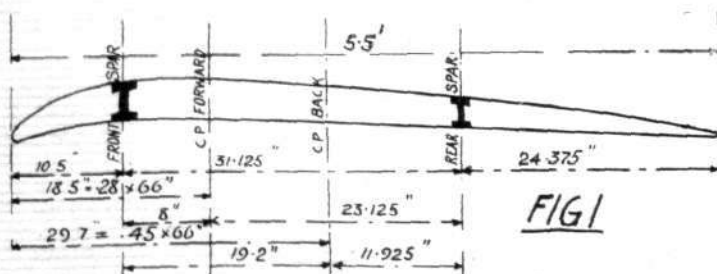
$$\begin{aligned}\text{Weight of top planes} &= \frac{220 \times 192}{368} = 115 \text{ lbs.} \\ \text{,, bottom planes} &= 105 \text{ lbs.}\end{aligned}$$

Subtracting these from the respective total weights supported we have—

$$\begin{aligned}\text{Net load on top plane} &= 808 \text{ lbs.} \\ \text{,, bottom plane} &= 572 \text{ ,,} \\ \text{The net load per sq. ft. of top planes} \\ &= \frac{808}{192} = 4.2 \text{ lbs. per sq. ft.}\end{aligned}$$

$$\begin{aligned}\text{The net load per sq. ft. of bottom planes} \\ &= \frac{572}{176} = 3.25 \text{ lbs. per sq. ft.}\end{aligned}$$

(2) *Distribution of Load Between the Spars.*—Find the loads on the front spars when the centre of pressure is farthest forward,



and the loads on the rear spars when the centre of pressure is farthest back, the movement of the centre of pressure being taken for a range of reasonable possible angles of incidence.

Example (d) The movement of the centre pressure is taken to be from .28 to .45 of the chord, measured from the leading edge. (This corresponds to a range of angle of incidence of from 1° to 15°).

The dimensions of the wing section are given in Fig. 1.

$$\begin{aligned}\text{Load per ft. on top plane} &= 5.5 \times 4.2 = 23.1 \text{ lbs.} \\ \text{,, bottom plane} &= 5.5 \times 3.25 = 17.9 \text{ ,,}\end{aligned}$$

When the centre of pressure is at .28 of the chord from the leading edge, the load on the front spar is obviously at its greatest value.

$$\begin{aligned}\text{Maximum load per ft. on front top spar} \\ &= \frac{23.1 \times 23.125}{31.125} = 17.15 \text{ lbs. per ft.}\end{aligned}$$

$$\begin{aligned}\text{Maximum load per ft. on front bottom spar} \\ &= \frac{17.9 \times 23.125}{31.125} = 13.3 \text{ lbs. per ft.}\end{aligned}$$

When the centre of pressure is at .45 of the chord from the leading edge the load on the rear spar is at its greatest value.

$$\begin{aligned}\text{Maximum load per ft. on rear top spar} \\ &= \frac{23.1 \times 19.2}{31.125} = 14.25 \text{ lbs. per ft.}\end{aligned}$$

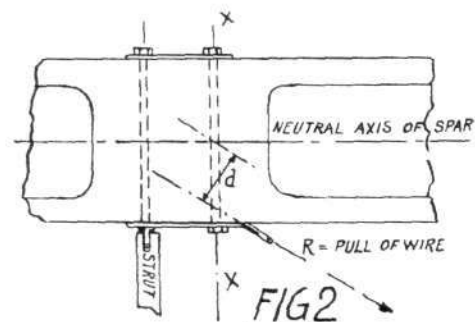
$$\begin{aligned}\text{Maximum load per ft. on rear bottom spar} \\ &= \frac{17.9 \times 19.2}{31.125} = 11.05 \text{ lbs. per ft.}\end{aligned}$$

(3) *Bending Moment on Spars.*—Determine the bending moment on the spars, treating them as continuous beams.

Example. (e) *Points of Support.*

In the case of the lower spars, the points of support are the strut hinges, but on the top spar the points of attachment of the lift wires are the points of support, and the thrusts from the struts must be taken as concentrated loads.

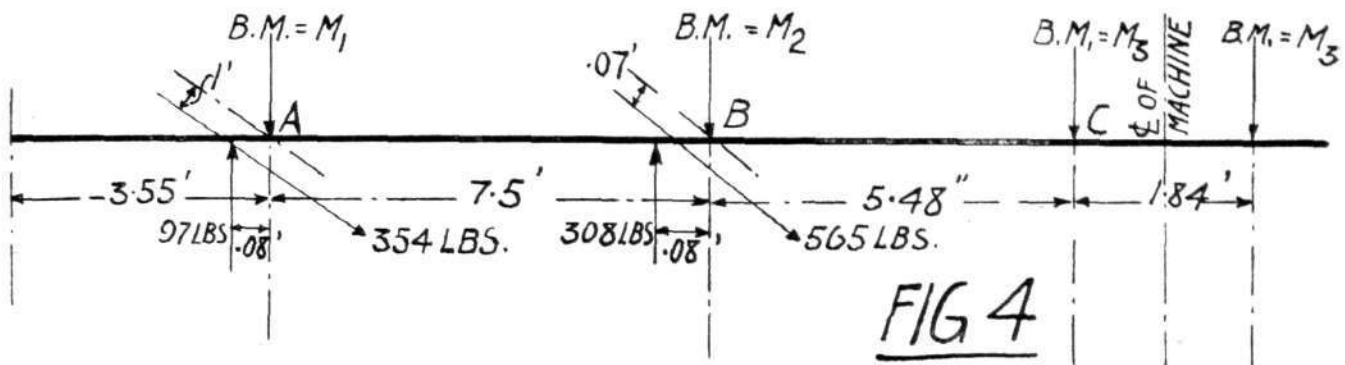
(f) *Bending moment due to offset pull of wire.* The pull of the lift wires usually produces a bending moment on the spars.



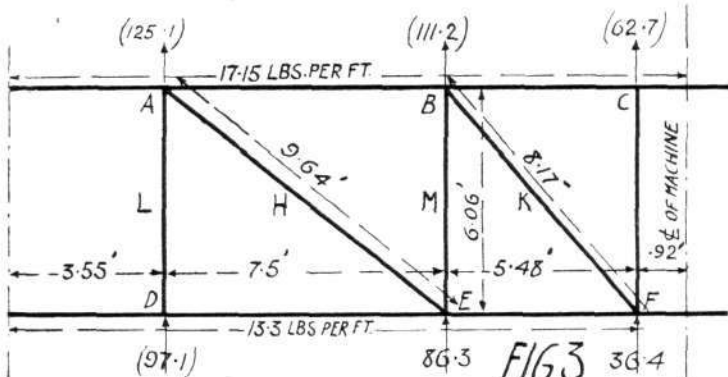
In Fig. 2 the axis of the bolt, XX, is the position of the support, and the bending moment on the spar at XX due to the pull, R, of the wire is Rd .

To determine the value of this bending moment at the various supports, the loads in the wires must be determined approximately by assuming each part of the spar to be separate from the remainder.

Fig. 3 gives the dimensions and loading for the front spars of BE2.



Resultant load at A = $17.15 (3.55 + 3.75) = 125.1$ lbs.
 " B = $17.15 (3.75 + 2.74) = 111.2$ "
 " C = $17.15 (2.74 + .92) = 62.7$ "
 " D = $13.3 (3.55 + 3.75) = 97.1$ "
 " E = $13.3 (3.75 + 2.74) = 86.3$ "
 " F = $13.3 \times 2.74 = 36.4$ "
 Load in wire H = $\frac{222.2 \times 9.64}{6.06} = 354$ lbs.
 " K = $\frac{419.7 \times 8.17}{6.06} = 565$ lbs.
 Load in strut L = 97.1 lbs.
 " M = 308.5 "



(g) Bending moment diagrams for each portion of spar taken as if separate and simply supported are first drawn. The front top

spar only is taken in this example. The loads on the spar are as shown in Fig. 4.

Uniformly distributed load = 17.15 lbs.

Part AB (Figs. 4 and 5). Bending moment at centre due to uniformly distributed load = $\frac{17.15 \times 7.5^2}{8} = 120.7$ lbs. ft.

The bending moment diagram is a parabola with a maximum ordinate of 120.7 lbs. ft., as shown in Fig. 5.

Bending moment at A due to offset pull of wire = $354 \times .1' = 35.4$ lbs. ft.

The bending moment diagram is AQB in Fig. 5.

Bending moment at intermediate strut due to load in strut = $\frac{308.5 \times .08 \times 7.42}{7.5} = 24$ lbs. ft.

The bending moment diagram for this load is ASB.

The diagram AQWSB is the sum of the bending moment diagrams for the various loads.

Part BC. The bending moment diagrams for the uniformly distributed load and the pull of the wire are drawn in the same way as for part AB (see Fig. 5).

Part CC. The only load on this part is the uniformly distributed load.

Its bending moment diagram is shown on Fig. 5.

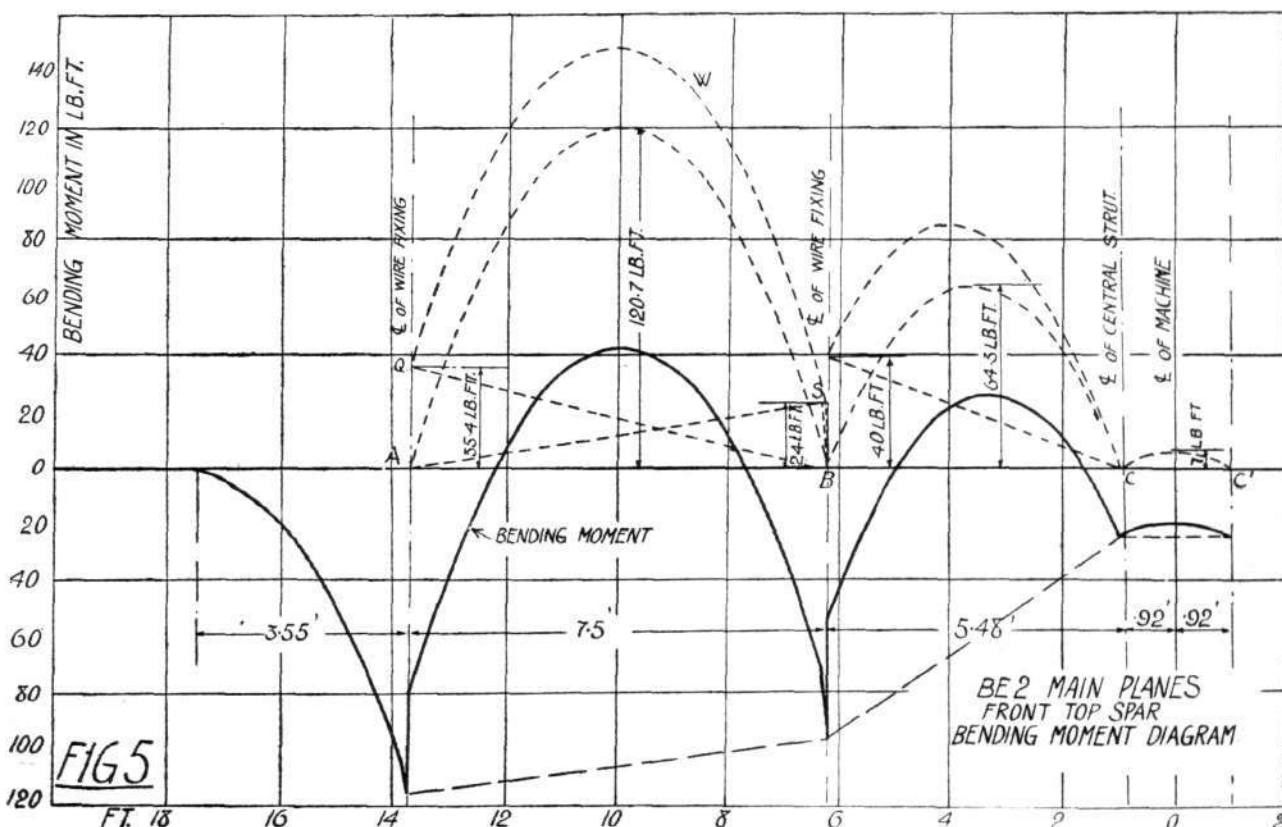
Overhanging Part. Bending moment at A due to uniformly distributed load = $\frac{17.15 \times 3.55^2}{2} = 108$ lbs. ft.

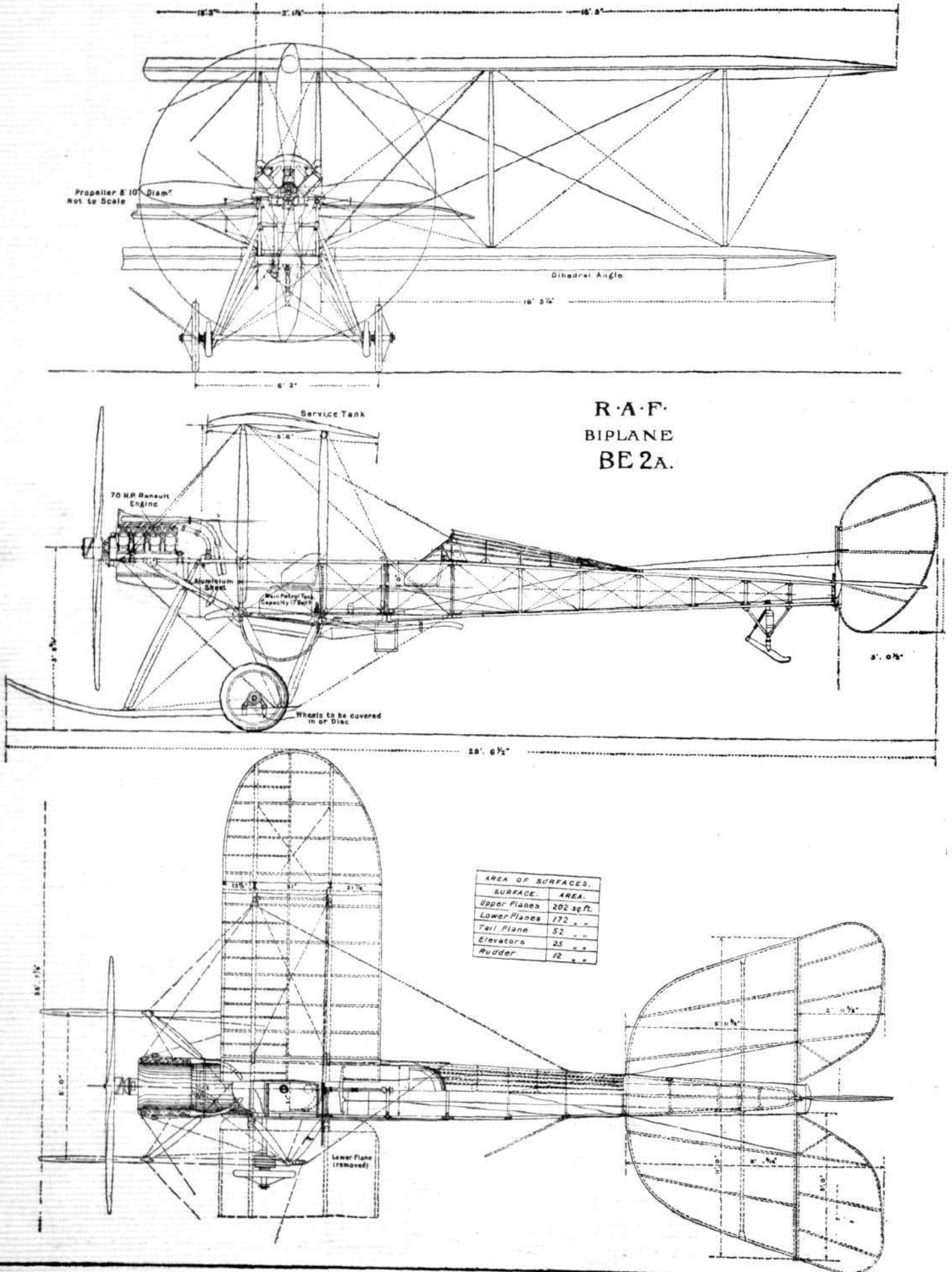
Bending moment at A due to load in outer strut = $97 \times .08 = 8$ lbs. ft.

Therefore, total bending moment (M_1) at A = 116 lbs. ft.

The diagram is shown in Fig. 5.

(h) Application theorem of three moments.





Elevations and plan of the R.A.F. biplane BE 2a, from the Technical Report of the Advisory Committee for Aeronautics, 1911-12.

If M_1 , M_2 , M_3 are the bending moments at three consecutive supports ABC of a continuous beam,

$$M_1 I_1 + 2M_2 (I_1 + I_2) + M_3 I_2 = \frac{6A_1 x_1}{I_1} + \frac{6A_2 x_2}{I_2}$$

where A_1 = area of BM diagram for portion AB if separate and simply supported. A_2 = do for portion BC.

x_1 = distance of CG of area A_1 from support A measured along beam.

x_2 = distance of CG of area A_2 from support C measured along beam.

I_1 = span AB.

I_2 = span BC.

Applying this in the case of the three supports ABC of the spar we have

$$7.5 \times 116 + 2M_2 (7.5 + 5.48) + 5.48M_3 = 3578$$

$$\text{i.e. } 25.96M_2 + 5.48M_3 = 3548 - 870 = 2708.$$

Again applying the same theorem in the case of the 3 supports, BC C', we have

$$5.48M_2 + 2M_3 (5.48 + 1.84) + 1.84M_3 = 965$$

$$\text{i.e. } 5.48M_2 + 16.48M_3 = 965.$$

We now have two equations in M_2 and M_3 and these determine the value of M_2 and M_3 . $M_2 = 98$ lbs. ft.

$$M_3 = 25 \text{ lbs. ft.}$$

(k) The bending moment at the supports are marked off on the diagram and the points for consecutive supports joined by straight lines.

On these lines the original total bending moment diagrams are erected, making vertical distances from the line equal to vertical distances of the original from the axis. The result is the bending moment diagram for the continuous spar as shown in Fig. 5.

(4) **Loads in Struts and Wires and End Loads in Spars.**—Determine the resultant vertical forces at the supports of the spars allowing for bending moment.

Example (1). Resultant vertical force at support A = $17.15 (3.55 + 3.75) + \frac{M_1 - M_2}{7.5}$
 $= 125.1 + 2.4 = 127.5 \text{ lbs.}$

Resultant vertical force at support B = $17.15 (3.75 + 2.74) + \frac{M_2 - M_1}{7.5} + \frac{M_2 - M_3}{5.48}$
 $= 111.2 - 2.4 + 13.3 = 122.1 \text{ lbs.}$

The resultant vertical forces for the bottom spar having been similarly found, the loads in the struts, wires and spars can be found as in section (3) (f). For strict accuracy the bending moment diagram should be recalculated using the new loads found for the wires, but this is unnecessary for practical purposes.

(5) **Stresses in Spars.**—To estimate the stresses in the spars, the stress due to bending moment is added to that due to end load. For sections not very near the supports, and where the end load is compressive, the extra bending moment due to end load and deflection must be added to the bending moment due to the lift.

If P is the end load and d is the deflection at the section, the amount $2Pd$ should be added to the bending moment, the product Pd being doubled to allow for extra deflection due to end load.

The deflection is found by integration of the slope diagram, which is first obtained by integration of the bending moment diagram.

If P = end load at any section (compression),

d = deflection,

M = bending moment,

z = modulus of bending,

A = area of section,

$$\text{Then stress at outer fibre} = \frac{M + 2Pd}{z} + \frac{P}{A}.$$

(6) *The margin of strength of struts should be based on their crippling loads.*

From tests made at the R.A.F., the following formula is found to give approximate values for the crippling loads of spruce and ash pin-jointed struts:—

$$\text{Crippling load in lbs.} = \frac{FA}{1 + aL^2/k^2}$$

Where F = 5,600 lbs. per sq. in. for spruce,
 $= 6,250$ „ „ ash,

A = area of section,

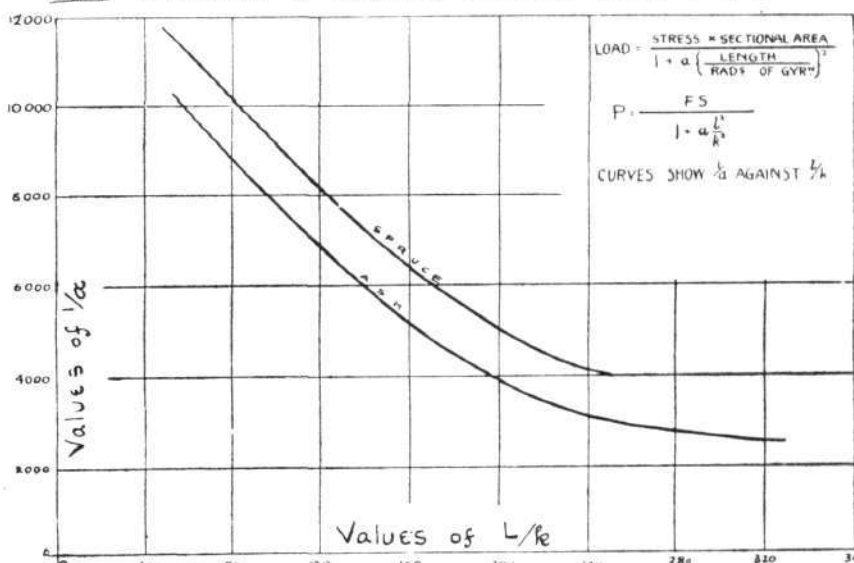
L = length,

k = least radius of gyration of section,

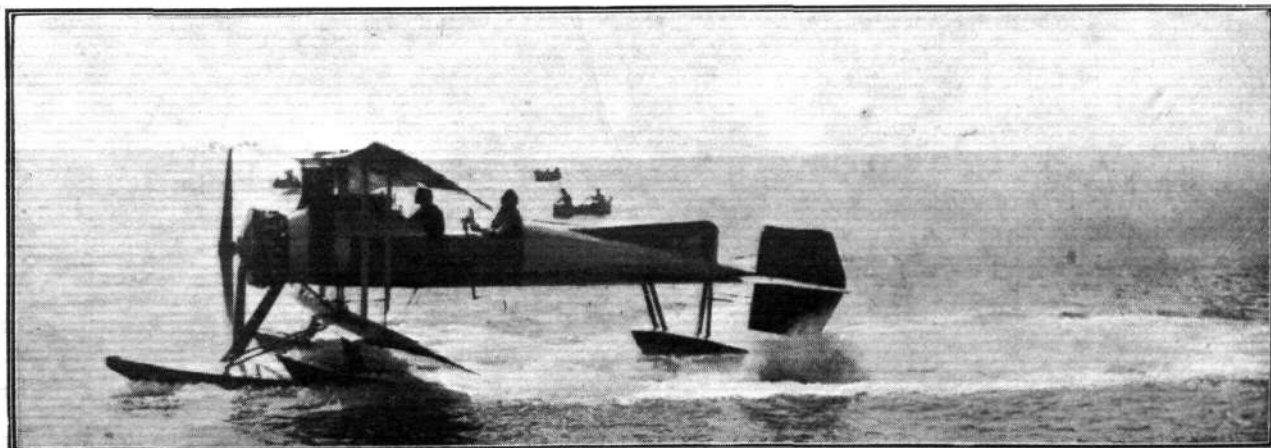
a = constant which depends on value of $\frac{L}{k}$ as shown in Fig. 6.

(7) **Stresses Due to Drift.**—The maximum load on the plan

FIG 6 COMPARISON OF STRENGTHS OF ASH AND SPRUCE STRUTS



due to drift can be taken as a uniformly distributed horizontal load of one-sixth of the lift, equally divided between the spars. If the drift is taken by the internal drift wires the rear spars are put in compression and the front spars in tension. If taken by the external wires the front spars are put in compression. The loads in the spars and wires are calculated in the same way as for an ordinary braced structure, and should be added to those due to lift.



A Breguet getting ready to rise.

CORRESPONDENCE.

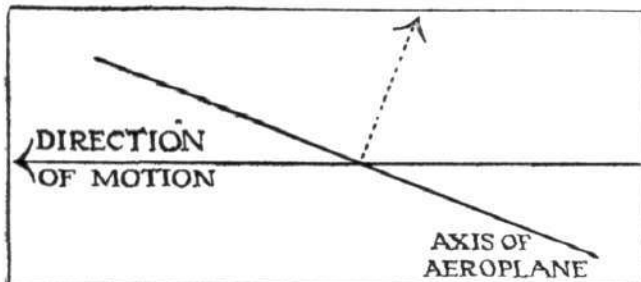
The Theory of the Dunne Aeroplane.

[1800] I have read with much interest Mr. Dunne's theory of his aeroplane, and should like to add my tribute to such a splendid piece of constructive theory. I should like, however, to say a few words of criticism on what he terms the "reserve tangential" (see p. 968 in FLIGHT of August 30th).

It is not quite clear whether he means the base line in Figs. 12 and 14 on that page to be a line fixed in regard to the aeroplane (i.e., its longitudinal axis), or whether he means it to represent the direction of motion.

If it is the former, then I should like to point out that a forward force component along this line does not necessarily cause any increase of speed, because it leaves out of account the component at right-angles to this line (shown by the dotted line in my figure), which slopes backwards in regard to the direction of motion. Hence as the angle of incidence increases, this latter component tends increasingly to stop the motion.

But if the base line represents the direction of motion, then I must join issue as to the possibility of there being a forward component at all at any angle of incidence. For if this were possible,



then, by flying the aeroplane always at this particular angle of incidence there would be no backward drift (nay, there would be a forward force) and the aeroplane could fly without an engine.

To criticise Mr. Dunne's argument more in detail, I would say, that as the angle of incidence increases not merely do the forces on different sections of the wings (represented by the arrows in Figs. 12 and 14) change in amount as he states, but their direction also changes and each will slope more backwardly. A study of M. Eiffel's diagrams in his "Resistance de l'Air," will confirm this. Now while it is quite true that the air pressure on any section of the wing is influenced by the neighbouring sections so that it is quite possible that certain sections may give forward "tangential" forces, the resultant of these pressures on the whole wings must necessarily be backwards, otherwise, as I have said before, one could fly without an engine.

A similar case will be clearly seen by looking at M. Eiffel's diagrams of the distribution of air pressure on the different parts of a single wing surface. The pressures on certain parts of the surface slope forward, giving forward "tangentials," but the resultant of all the pressures invariably slopes backwards.

In thus criticising Mr. Dunne's explanation, I do not in any way question the statement that his aeroplane does dive in a more gradual manner than other machines; I only doubt if he has hit on the correct theory of its action.

In conclusion, I should like (if Mr. Dunne will not regard it as an impertinence) to express my regret that his aeroplanes are not more in evidence at flying meetings, &c., so that the public could see and appreciate their qualities. J. H. HUME-ROTHERY.

The Royal Aero Club and its Regulations.

[1801] We enclose herewith copy of letter we have to-day addressed to the Royal Aero Club in reply to their letter published in the Press dated the 7th inst. In view of the public interest in this affair, we shall be glad if you can find space for it in your columns.

For the Grahame-White Aviation Co., Ltd.,
RICHARD T. GATES,
 Director and General Manager.
 [Copy enclosed.]
 The London Aerodrome,
 Hendon, N.W.,
 October 10th, 1913.

The Secretary, The Royal Aero Club.

Re Brindejone des Moulinais.

Sir,—Your letter of October 7th has been duly considered by the Directors of this Company. In face of your Committee still persisting in their attitude that they were justified in disqualifying M. Brindejone without giving him an opportunity of defending himself, although he had not broken a single competition rule, we have resolved to refer the matter to the Stewards of the Club.

Will you therefore inform us what is the earliest date that we may have an opportunity of placing all the facts before the Stewards for their consideration?

Pending the consideration of the case by the Stewards, it was not our intention to deal further in this letter with your treatment of M. Brindejone. Your action, however, in publishing in the Press a letter to this Company calculated to mislead the public as to the position we have adopted on behalf of not only M. Brindejone, but of all other aviators who might in the future be as unjustly dealt with, makes it necessary for us to refute the statements made, viz. :—

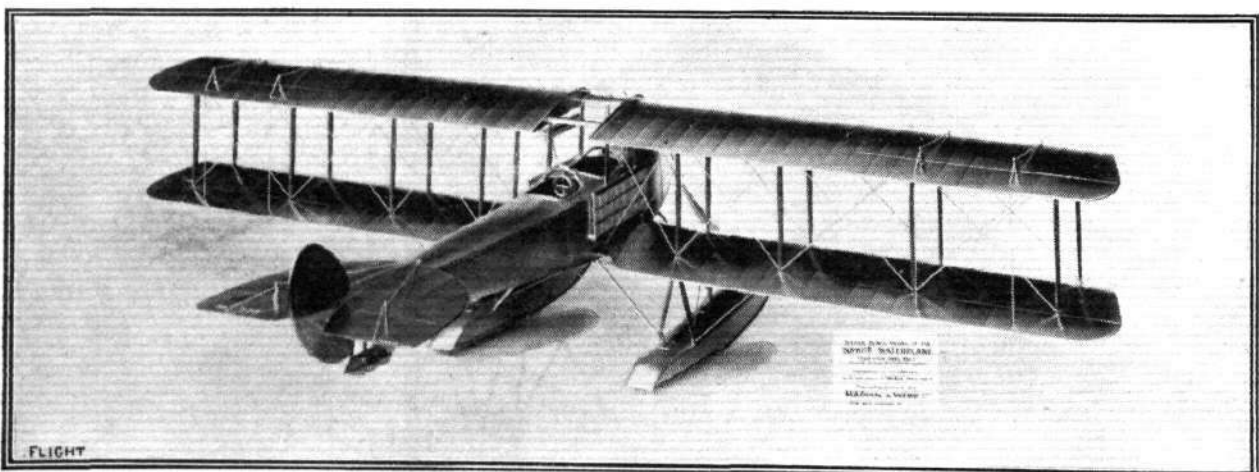
1. That we have failed to pay to Mr. Brock the prize he won.
2. That your Committee feel that it is essential that they should support Mr. Brock in his rights by awarding him first prize.

With reference to the first there is no question of "failed," as the first prize was handed to M. Brindejone at the close of the meeting, the second prize being received by Mr. Brock's representatives the following day.

Regarding the second, Mr. Brock himself has made a communication to the Press wherein he indicates that he does not desire you to support him by injustice to M. Brindejone, and that he has never at any time requested you to do so, your action meeting with his entire disapproval.

As to that part of your letter referring to the rules, we must agree that the manner in which they are framed makes it quite easy for them to be misinterpreted, and in consequence we have had to use exceptional care in conducting our competitions. That we have been successful in doing so is witnessed by the fact that, although we have held over 200 competitions at our aerodrome, there is no single instance on record of a dispute or protest in which we have been involved.

Yours faithfully,
 For the Grahame-White Aviation Co., Ltd.,
 (Signed) **C. GRAHAME-WHITE** } Directors.
RICHARD T. GATES



The beautiful silver scale model of the Sopwith waterplane used in the Daily Mail Circuit of the United Kingdom, which was presented to Mr. Hawker by the distributors of Shell Motor Spirit. This delightful specimen of the silversmith's art was manufactured by Messrs. Mappin and Webb, Ltd.

ARMCHAIR REFLECTIONS.

By THE DREAMER.

The Manhood in Man.

IT is the manhood in man that has placed aviation in the position it occupies to-day. The fearless self-sacrificing manhood of Wilbur Wright placed aviation on the slips of sound principle which lead to concrete success. It was the same qualities in those experimenters before him that enabled him to do so. It is the glorious, though subconscious, manhood in man that has enabled our pilots to carry on the work to this moment. It is the manhood in man that is urging those brave men in South Wales to go down into a blazing pit to the rescue of their stricken comrades. Man will, when he can, lay his head upon silken pillows and allow ennui to take possession of his body, but the manhood is there awaiting the call to spring forth like a lion eager for the fray. Even such a small thing as hearing "The Soldiers' Chorus," from *Faust*, is sufficient to set one's blood tingling—this is the awakening of slumbering manhood.

There can be but one thing for the mind of all thinking men to reflect upon this week. Once more has the mighty Atlantic claimed its toll, and once more has the incident brought out all the good that lies latent in man. ". . . and only man is vile" is given the lie direct every time the manhood of man is called upon in the cause of humanity, as in the case of the terrible burning of the "Volturno" in mid-Atlantic.

It has been said that no man yet understood woman; leaving that out of the question, I much doubt whether man yet really ever understood man; whether, even, man ever understood himself.

"Man, know thyself" is as futile now, as on the day that it was first written; no man ever yet, or ever will, know himself as he really is. And it is not a question of nationality. In the time of a struggle, nation against nation, men of each nation will struggle to the bitter end, ready to lay down their lives for their country. Can the men of one country but kill a few thousands more of his then enemies, than another, it is a time of national rejoicing, but in times of peace, let but a great and sudden calamity overtake his erstwhile "enemy," and he will as readily lay down his life to succour him.

The "Volturno" was no floating palace. She did not carry a cargo of millionaires, but she had some seven hundred souls on board—men, women and children—and men, women and children in distress is the call that calls manhood from man. Millionaire or pauper—Park Lane or Whitechapel—it is all one to man, real man; it is lives to be saved, not money to be earned; and it is well and good that it is so. The Devil is in the best of us; God is in the worst of us. Man has taken sides against man ever since man was man; but man will ever take but one side, and that the side of man; all manhood on one side when it is man *versus* element. The "Volturno" with its seven hundred souls on board was on fire in mid-Atlantic. Can you picture to yourself the awful scene? Can you imagine this huge steamer with its freight of human beings equal in number to more than half the audience in some of our theatres? Men who live and eat, who love and are loved; men with ambitions, and struggles unrewarded; men with muscle and sinew and pluck and determination to work and sweat to earn a competence for the wives and children dependent upon them. Women who, for the love of the man, have cast their lot for better or for worse with that of the man, and for whom and to help whom they have left home and friends

and country to seek in that new world that which was denied them at home.

Can you imagine the little children? Children just like yours at home; children who love their parents as yours love you, and who look to their father and mother to protect them against all happenings. Can you without any great effort imagine these on a burning ship, which, large in itself is but a mere speck on the mighty sea? A speck so small and so isolated that the nearest living being is more than seventy miles away, and all around nothing but raging tumbling water, and under foot a veritable hell, gradually but surely eating its way onwards, and ever driving living fuel step by step to the uttermost end of temporary respite, with, failing human rescue, only one possible ending. What can fathers say to reassure their wives? What can mothers say to comfort their children? What more, than the thought of these scenes be needed to bring out the manhood in man, if man be but within striking distance?

Man was within striking distance, and man heard, even over seventy miles of raging water, and man answered the call as man ever will. If ever a man deserved a statue in the chief square of every city in the world, that man is Marconi, and the statue should be of pure gold. The one hope of these poor stricken souls, as it has been the hope and salvation of thousands of others in a similar plight, lay in those few thin wires overhead, and in that cool operator so persistently sending out his message of S.O.S., a message that is not in vain, and which will be instantly answered by every ship within range, no matter of what nationality; nationality does not count where lives are to save. Almost as soon as the message is tapped out it is answered by the nearest ship and passed on to all others within range, and in a few moments near a dozen ships of all nationalities are rushing full speed to the rescue, some were going East, some were going West, most were hundreds of miles away, but all turned their heads in one direction; here were human lives to be saved, and the manhood in man was aroused. Think of the joy of these poor souls on board the stricken liner, as one after another they saw help coming to them from all directions.

Hope ever rises triumphant in the human breast, and in your imagination you can see the father able to smile as he tells his wife and children that now all would be well. Think of these brave men on board the arriving steamers, each and every one of them anxious to lay down his own life to help to save others. These men, most of them, also have wives and children at home. If they die these wives and children will be in sore distress, yet they think not of that, the manhood in man is aroused and they think only of work to be done and other men's wives and children to be saved. Should they for one moment think of those at home, they feel and know that other men will succour them even as they are succouring these—"and only man is vile," indeed. Man is the most magnificent creature on God's earth, will he but let himself be a man, but, alas! how few are men till something of this description calls the manhood out of them? Every man has it in him to do noble deeds; most men will do noble deeds when put to it, all men would do noble deeds were they but to cast aside the horrible, narrow-minded, belittling influences which beget selfishness and stifle nobility.

"Man is God's most noble animal." Let him see to it that it be so.

BRITISH NOTES OF THE WEEK.

The Daily Mail Round Britain Race.

THE Competitions Committee of the Royal Aero Club are at work on the regulations for next year's waterplane race round Great Britain for the *Daily Mail* £5,000 prize, and, although the date has not yet been definitely fixed, it will probably be either in July or August.

Next Year's Aero Show.

It will be seen from the official notices of the Royal Aero Club that the date has now been fixed for the Aero, Motor Boat and Engine Show, at Olympia, in 1914—viz., March 16th to the 21st.

Guns for Aeroplanes.

IN his speech at the annual general meeting of the Birmingham Small Arms Co., Ltd., the Chairman, Sir Hallewell Rogers, spoke of the possibilities of arming aeroplanes with quick-firing guns. He said that the B.S.A. Co. had made arrangements to become the sole manufacturers, outside the U.S.A., of the Lewis automatic machine gun, which was being investigated by the British, U.S., Swedish and Russian Governments.

Mr. Hawker's Mishap.

THE mishap which befell H. G. Hawker when starting on Wednesday last week on an attempt for the British Michelin Prize, was fortunately not so serious as was at first stated, at any rate so far as the pilot was concerned. On examination at the Weybridge Cottage Hospital it was found that Hawker had escaped with a severe shaking, but he was out again, fit and well, on Monday.

Blériots for the R.F.C.

THURSDAY of last week saw three two-seater Blériot monoplanes being put through their official tests at the Royal Aircraft Factory, Farnborough, Perreyon acting as the pilot. The one hour flight, climbing, speed (fast and slow) and rolling tests, for all three machines, on Laffan's Plain, were successfully accomplished between 7 a.m. and noon! The speed range was found to be over 27 m.p.h. We understand that these machines are being sent to Netheravon and that Mr. Norbert Chereau, general manager of the Blériot firm, will shortly be delivering three single-seaters to the Royal Flying Corps.

Vickers Ltd., at the Ghent Exhibition.

QUITE a work of art is the interesting book issued by Messrs. Vickers Ltd., in connection with their exhibits at the Ghent Exhibition, which, incidentally, have been awarded six Grand Prix, one Diploma of Honour, three Gold Medals, and one Silver Medal. These awards include a Gold Medal in the aeronautics section, the only British success in the section, to the Wolseley Tool and Motor Car Co., Ltd. The book has a coloured frontispiece,

depicting one of the British battleships built by Messrs. Vickers Ltd., and it is plentifully illustrated by photographs, all beautifully reproduced, showing the productions of Messrs. Vickers Ltd., and its subsidiary companies, the Electric and Ordnance Accessories Co., Ltd., and the Wolseley Tool and Motor Car Co., Ltd. The book also contains a very clearly written description of the exhibits, and this, as well as the titles under the pictures, is printed in both English and French. It is a unique publication, worthy of the house of Vickers.



"Flight" Copyright.

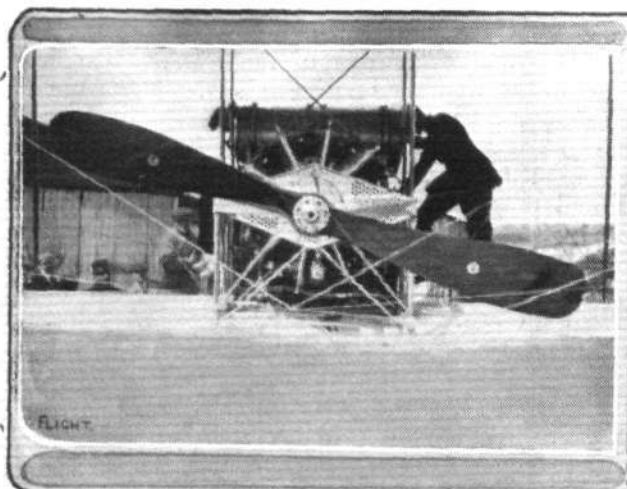
MESSRS. RADLEY AND ENGLAND PUNTING AT SHOREHAM.
—This punt is one of the original floats, fitted to their waterplane, converted into a punt.

Lang Propeller Successes.

IN connection with the splendid passenger world's records made by the Grahame-White "aero-char-a-banc," it should be noted that the machine is fitted with a Lang propeller.

Records for Emaillite.

THE planes of the Grahame-White 5-seater biplane, which has secured world's passenger records with seven and nine passengers, are doped throughout with Emaillite.



General view of Caudron Flying School at Le Crotoy showing their 200 h.p. Anzani hydroplane specially built for the Deauville competition.—On the left is a closer view of the machine, giving some idea of the size of the propeller and the situation of the cylinders on the 200 h.p. Anzani. This engine has a forced oil feed which is worked by two miniature propellers fixed on the lower plane. Our view is taken from the tail of the machine, and it should be noted that this machine is of the engine behind or pusher type.

FOREIGN AVIATION NEWS.

1,366 Miles in 24 Hours.

ANOTHER marvellous performance of this week was that of Victor Stœffler, who, on an Aviatik biplane, between midnight on Monday and three-quarters of an hour after midnight on Tuesday, succeeded in covering 2,160 kiloms. or 1,366 miles. He set out from Johannisthal at 12.6 a.m. on Tuesday, and flew 230 kiloms. to Posen, and after a rest of 40 mins. returned to Johannisthal. After a rest of similar duration, he made the next stage of 680 kiloms. to Mulhausen, where he rested for an hour. Then on to Darmstadt, 255 kiloms., and back to Mulhausen. Making a stop of only 2 mins., he returned to Darmstadt, and, after resting for 10 mins., went back once more to Mulhausen, landing there at 12.42 a.m. on Wednesday. He had thus flown 2,160 kiloms. in 24 hrs. 36 mins., his total time in the air being 22 hrs. 6 mins. The flight was made in connection with a prize of £5,000, offered by the German National Fund for 24 hours flying on an all-German machine.

Record Flight in Chili.

ON an old Blériot monoplane, the Chilean aviator, Figueroa, on September 15th, flew from Antofagasta to La Pampa, a distance of 340 kiloms. Unfortunately while making the return journey the machine was burnt, only the motor being saved. The pilot has, however, one of the latest pattern Blériots, on which he proposes to try to fly over the Andes.

Flying from Berlin to Copenhagen.

STARTING from Johannisthal at 8.33 on Sunday morning, Reiterer on an Etrich monoplane, with Capt. Neumann as passenger, flew to Copenhagen, making a non-stop journey and completing the 370 kiloms. in 4 hrs. 12 mins.

More Exhibitions by Pegoud.

THE 200,000 people who visited the Blériot aerodrome at Buc in connection with the fête organized by *Le Matin* on Sunday last, could hardly complain that they did not get their money's worth. At the commencement of the fête at 2.30 p.m., Perreyon, Domenjoz, and Blériot, each with a passenger, started off, and carried out an extraordinary series of evolutions, which could only be likened to the movements of a troupe of American step dancers. The machines flew together, rising and planing, and making very sharp turns, following a pre-arranged programme, all with a rhythmic harmony which was amazing. Chevillard flew over from the Farman ground and carried out his famous *chute de cote*, as well as other of his own special examples of trick flying. Later in the afternoon came the *pièce de résistance*, an exhibition by Pegoud. Mounting up to 100 metres he made several turns with his machine, apparently standing on one wing. Then he went up to 1,000 metres, turned the machine over on its back and, with the motor running, let it fly for 1 min. 30 secs., making four successive turns, the pilot's hands meanwhile being off the controls. Turning the machine back into its normal flying position, and regaining a height of 1,000 metres, he did the cork-screw twist, and when within 200 metres of the ground he looped the loop twice. Going up again to 500 metres, he did some more turns with the wings almost vertical, and looped the loop ten times in succession, finishing his exhibition by coming down on one wing, then two loops, and a final cork-screw twist before planing to the ground. On getting out of the machine, Pegoud entered a motor car which was to have been driven round the ground, but the public surmounted the barrier and surged round the car.

Looping the Loop on a Two-Seater.

AFTER making some alterations to the two-seater Blériot monoplane, Pegoud carried out some further tests on the 8th inst. With a load of lead, representing the weight of a man, on the passenger's seat, the machine flew upside down, looped the loop, and did the "S" dive apparently as easily as the single-seater.

A Blériot Stabiliser.

LAST week, Perreyon was testing at Buc a Blériot machine fitted with a new stabiliser invented by M. Blériot. The apparatus principally consists of a weight attached to an extension of the *cloche*, and in its trials it seems to have worked perfectly. In one flight, Perreyon took up M. Rene Quinton, and flew round and round for a quarter of an hour without touching the *cloche*, his arms, in fact, remaining folded.

Investigating an Accident.

AN inspection of the machine, in the wreck of which Sergeant Hurtard met his death at Sezanne on Saturday week, revealed a piece of carbon, from an arc lamp, in one of the cylinders, and it is thought that this was the primary cause of the accident. An enquiry is now being made with a view to finding out whether the carbon was placed there purposely, or whether it was a case of carelessness.

A Try for the Pommery Cup.

ON Sunday morning, Letort started from Valenciennes with the intention of flying to Russia, but owing to the mist he was forced to land in an open field near the Gasteau Camp. In landing, the monoplane turned over, and was damaged so much that it was impossible to continue.

Gougenheim has to Give Up.

AFTER flying over 600 kiloms. a day for three days in his attack on Fourny's record for the International Michelin Cup, Gougenheim was obliged to give up. As the close of the year's competition is now at hand and there are not sufficient days in which to beat Fourny's record, it may be taken for granted that he is the winner of the prize for 1913.

Flying from Paris to Cairo.

TO-MORROW, Sunday, Daucourt on a Borel monoplane is to start from Issy in an attempt to fly to Cairo. His route will be *via* Chaumont, Schaffhausen, Munich, Vienna, Belgrade, Bucharest, Constantinople, Jerusalem, and Port Said. Daucourt, who will be accompanied by M. Roux, expects to complete the journey of 4,000 miles in about a month. The attempt is being made under the auspices of the French Aerial League.

French Post Office and Aviation.

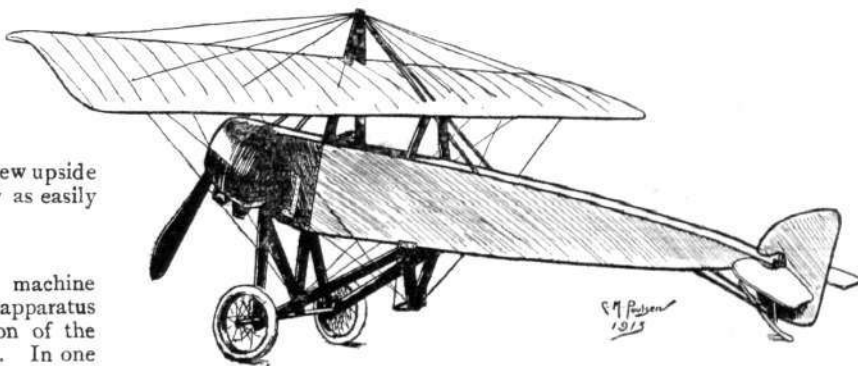
A SCHEME for the establishment of an aerial mail service between Paris and Pauillac, on the Gironde estuary, the port of departure of the South American mail steamers, has been laid before the French Cabinet by the Minister of Commerce, M. Massé. An experimental flight was made on Wednesday, Lieut. Ronin starting, with a bag of mails weighing 30 lbs. strapped to his Morane monoplane from Villacoublay, at 7 a.m. He was to stop on the way at Poitiers, but trouble with his motor necessitated a stop at Vendôme. Repairs were hurriedly effected and Poitiers reached at 12 o'clock. After only a brief delay for replenishment, he restarted and reached St. Julien at 2.30 p.m. At that point the mails were transferred to a waiting motor mail van and taken the remaining short distance to Pauillac in order to catch the liner "Perou" which sailed to Antilles and Central America at 3 p.m. The first experimental service, therefore, proved successful. Naturally special fees are to be charged for these aerial express letters, and we should say philatelists will be treasuring the first of the "franced" envelopes which are carried by this means.

Aerial Smuggling into France.

FROM Lille it is reported that the French Customs authorities are investigating some cases of alleged smuggling into France of silk and tobacco from Belgium. The aeroplanes are said to start from a place near the frontier and when over a field on French territory, rented by accomplices, the bales of contraband goods are dropped.

More Tests by Moreau.

AT Melun, on the 10th inst., M. Moreau carried out some further tests on his stable machine, flying for 20 mins. above the town and district with his hands off the control levers.



Sketch of the Morane monoplane built to the order of M. Santos-Dumont, who is again taking up flying.—Evidently M. Santos-Dumont is still in favour of a comparatively low centre of gravity as, it will be noticed, he has had the wings raised a considerable distance above the fuselage, so that the pilot sits *under* instead of *between* the wings. It will be interesting to see how this machine compares with the usual Morane monoplane as regards stability, as the only alteration appears to be the raising of the wings.

The Red Ribbon for Garros.

DURING his visit to Marseilles, the French President received Garros and Legagneux, who on Monday and the previous day had been flying over the town. The aviators were presented by M. Thierry, the Minister of Public Works, and after congratulating Garros on his flight across the Mediterranean, M. Poincaré said that the Council of the Legion of Honour had reported favourably on the proposition to confer the Chevalier's decoration upon Garros.

200 Kiloms. without Control.

ON Monday, Albert Moreau on his "aerostable" machine left Melun at 7.45 with his mechanic, to fly to his father's house at Montargis. He was, however, obliged to land near Ladon at 8.40, as owing to the mist he could not see his way. Starting again at 10.10 he reached Montargis after 25 mins. flying. At half-past three he started on the return journey and flying by Nemours, Lidy and Fleuriel Biere he arrived at Melun at five o'clock. Throughout these flights it is claimed the machine flew without the control levers being touched by the pilot.

Some Long Flights in France.

IN connection with the inauguration of a public flying ground at Chaumont (Haute Marne) on the 7th inst., some good flying was done by E. Vedrines and Bielovucic, who had flown over from Mourmelon on their Ponnier machines, and Marc Bonnier, who arrived from Villacoublay on his Nieuport. Senator Reymond also arrived on his Blériot. He had started from Buc on the previous Sunday, and had paid visits to Joigny, in the Loire district, and Gray; his total for the three trips being 750 kiloms.

The Johannisthal Meeting.

THE chief results of the flying week at Johannisthal are officially given as: Longest flight, Remus 4 hrs. 55 mins. Height, Stiploschek, 4,070 metres. Speed-range, Rupp 33'025 kiloms. (slow-speed 68'75 k.p.h., fast 102 k.p.h.). Get-off, Thelen 70'94 metres; landing, Rupp, 50'95 metres.

A German Fatality.

LIEUT. KOENIG was killed by the falling of his machine at Johannisthal on Monday.

Testing a Beacon for Aerial Traffic.

IN order to test the practicability of a beacon which has been erected at the Johannisthal aerodrome, one of the Zeppelin airships made a night cruise from Leipzig, starting at 3 a.m. on Tuesday. The light was seen thirty miles away, enabling the last part of the cruise to be made without recourse to the compass. Among the officers on board was the Inspector-General of Military Communications.

Landing on a Cottage.

ONE of the competitors in a night flying competition, which started from Johannisthal on Tuesday morning, had a very exciting time. The pilot, Reichelt, who was flying with his nephew, was making his way in the direction of the French frontier, when they ran into a thick fog. To add to their difficulty, the motor stopped, and there was nothing for it but to *vol plané* down and take their

chance. Suddenly they bumped into something and the machine stopped dead. Then the aviators were alarmed to hear voices beneath them, and eventually found that they had landed on the roof of a peasant's cottage at Morsbach, near Saarbrücken. The monoplane was smashed, but the occupants of machine and cottage were little the worse for the adventure.

Austro-Daimler Successes.

IT should be noted that the Union-Arrow biplane on which Sablatnig made his height records with three, four and five passengers, at the Johannisthal meeting was fitted with a 120 h.p. Austro-Daimler engine.

Death of a Danish Aviator.

THE Danish military pilot, Lieut. Ulrich-Birch, who was injured in the fall of his biplane at Copenhagen on the 2nd inst., died in hospital, from his injuries, on the 10th inst.

Flying in Roumania.

QUITE a deal of very useful flying is being done in Roumania by the Army officers, as can be seen by the following extract from a letter, dated October 6th, from one of the Bristol mechanics at the flying school at Bucharest.

"Yesterday, Sunday, October 5th, Capt. Popovici did a very fine flight of 200 miles with a passenger on the Bristol tractor biplane, and in the evening he took a lady for a flight. Lieut. Beroine has also been flying very well, and to-day flew alone, rising to a height of 1,000 metres in 7 mins. with both tanks exactly half full. Lieut. Pascanu also put up two flights yesterday and to-day of two hours each. Capt. Popovici intends going in for a 6 hours' flight. Lieut. Beroine is flying the Bristol machines in a perfect manner. They have nothing but praise for the Bristol tractors, and everything is going on very satisfactory, and they are out on them every opportunity they can get, which speaks for itself."

A Roumanian Fatality.

AFTER making a fine flight from Bucharest to Targovishte, about 50 miles away, Lieut. Negel was the victim of an accident which cost him his life. As his biplane was landing it turned over, and the pilot being thrown out received injuries which terminated fatally. The mechanic who was accompanying him escaped practically unhurt.

A Mishap in South Africa.

WHILE making a flight with Lieut. Dunlop at the flying school at Kimberley, the biplane, piloted by Mr. Cheeseman, was caught in an air-pocket, and turning over fell a distance of about 100 ft. Mr. Cheeseman sustained a broken leg, but his passenger escaped with a shaking. Unfortunately Mr. Cheeseman succumbed to his injuries on Wednesday.

Orville Wright Tries a Single-Propeller Machine.

ON the 20th ult., Orville Wright, for the first time, did some flying on one of the single-propeller machines which have been built this year especially for exhibition work. This machine is very speedy and rises from and lands on the ground very easily, for which reason it has been favourably received by the military authorities for reconnaissance work. Among the interested spectators of these tests were Mr. Griffith Brewer and Mr. Alec Ogilvie.

Long Trip on Flying Boat.

IN his Curtiss flying boat, accompanied by a friend, W. Thaw on October 1st, flew from Newport to New Haven, Ct., the flying time for the distance of 105 miles being 93 minutes.



THE ITALIAN LAKES AEROPLANE RACE.

FOLLOWING on the conclusion of the race round the Italian lakes, as recorded in our last issue, the competitors had to carry out the qualifying tests which could not be completed before the start, on account of the bad weather. On the 8th inst. only the get-off tests could be carried out, and in these Fischer's Farman excelled, leaving the water in 18 metres and in 5½ secs. Chemet's Borel was next with 50 metres and 12½ sec., and Garros (Morane) third with 80 metres and 12½ secs., Landini (S.I.A.) fourth with 100 metres and 15½ secs., while Hirth (Albatross), who, it will be remembered, was first in the race, was last, taking 165 metres and 25 secs. The next morning the climbing speed was tested, and the results were: Landini, 720 metres in 11 mins. 35 secs.; Garros, 600 metres in 10 mins. 2½ secs.; Fischer, 500 metres in 16 mins. 24 secs.; Chemet, 500 metres in 23 min. 6½ secs.; Hirth did not attain the stipulated 500 metres. The height trials were also carried out, and Garros went up alone to 2,100 metres; Chemet, with passenger, 1,200 metres; Fischer, with passenger, 1,170 metres; Hirth, alone, 1,450 metres; Landini, with passenger, 1,000 metres. Although the official results have not been published, yet it is possible that Hirth may lose the first place, as his machine did not complete the climbing test, while it is also claimed that he infringed the regulations by changing one of the floats of his machine before making the get-off test.



Harry Oelerich, chief pilot of the D.F.W. Flying School, after beating the German duration record by 6 hrs. 8 mins. a few weeks back.

Models

Edited by V. E. JOHNSON, M.A.

Model Engineer Exhibition. Aviation Section.

THIS section of the Exhibition held at the Royal Horticultural Hall, Westminster, October 10th to 18th, has been managed by the K. and M.A.A., and is under their entire control. It is divided into six sections for competing models, together with a small loan section. Taking our data from the official catalogue, the number of models exhibited is as follows:—Class I.—Power-driven models, three. Class II.—Hydro-aeroplanes, seven. Class III.—Scale models and models embodying new ideas applicable to full-sized machines, eight. Class IV.—Rise-off-ground machines, twenty-three. Class V.—Aero motors for models, two. Class VI.—Single-screw, rise-off-ground machines, five. Loan section, five. Total 53, or about one-third the number exhibited at the Royal Aero Show at Olympia. When reviewing any particular exhibition, or part of the same, one must give due weight to the general conditions which the competitors have had to fulfil, and not criticise the effect but the cause.

Bearing this in mind, the results turned out by the competitors do them very great credit; there are some very fine examples of both workmanship and design, scarcely anything that is crude, and nothing bad. There are no freak models. There are, it is true, several examples of models built solely for duration, notably in Class IV. But if duration is going to be the preponderating factor, competitors will naturally construct models which shall be capable of remaining in the air as long as possible, all detail must of necessity be sacrificed, and we have beautiful examples so far as workmanship, finish, and (in their way) design are concerned of machines which reflect the greatest credit on the designers and builders, but are they *models*? If so, under what definition do they come? The time has gone by when r.o.g. machines require a specially prepared surface to rise off, the time is also past when two wires and a couple of discs of one of the lightest substances that can be found should be admitted as constituting a chassis; ample proof is afforded of this again and again, in the really well-designed chassis exhibited by the majority of the models shown.

Amongst a really excellent collection of models, one stands easily first—the Caudron scale model exhibited by Mr. C. Desoutter. In the writer's opinion it is the finest *model* aeroplane that he has yet seen—moreover, although a scale model and power-driven at that it has proved itself capable of flight under its own power. The following are a few particulars of this model, relative to which we hope to be able to supply fuller particulars, &c., later on:—Caudron biplane, $\frac{1}{2}$ scale, driven by compressed air; lifting surface $7\frac{1}{2}$ sq. ft., weight 1 lb. 10 ozs., propeller thrust 1 lb. The workmanship and finish are of the very best, and the amount of detail shown remarkable, considering the total weight combined with the fact that the model has nothing of a flimsy nature about it.

Mr. C. Desoutter also exhibits a beautifully-made and well-designed little 4-cyl. compressed air engine of $\frac{1}{8}$ in. bore and $\frac{1}{8}$ in. stroke, rotary valve, constructed of magnalium and steel, which weighs 3 ozs. and is capable of giving a thrust of $1\frac{1}{2}$ lbs. The same exhibitor also shows the monocoque CO₂ model exhibited by him at Olympia, which has been already illustrated in this section.

Mr. H. H. Groves shows only one, a power-driven model, Canard type, similar to one of the two exhibited by him at Olympia. This model has already made a number of very good flights; on one occasion one of the wings collided full tilt with a lamp-post, but such is the strength of the machines constructed by Mr. Groves, that the only damage done was a *slight* starting of one of the ribs. It is a model built throughout for practical experimental work, designed both for rising from and alighting on the surface of rough ground without damage, and is as good an example of its type as one could wish to see.

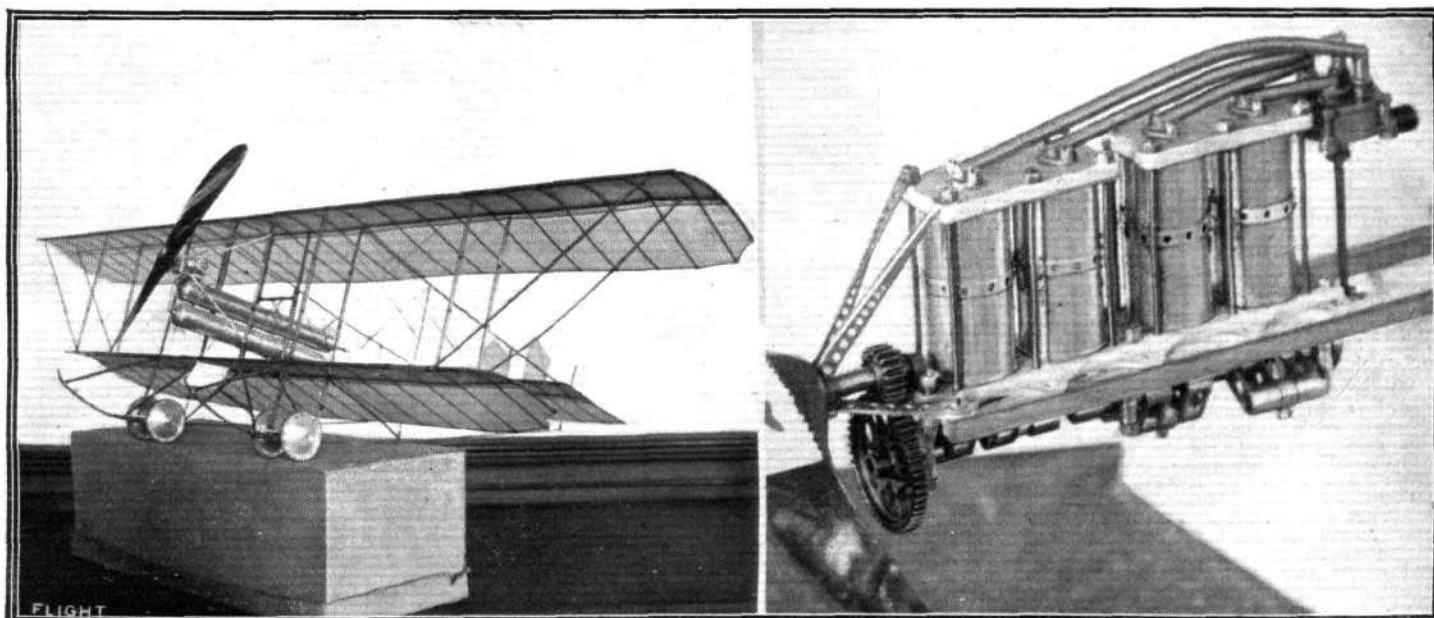
The model hydro-aeroplanes do not call for any especial comment, being constructed on the usual lines. We were, however, rather struck by the machine exhibited by Mr. C. C. Dutton, more especially by the construction of the wire chassis connecting the floats to the A frame. But where is Mr. Dutton's hydro-tractor, which we certainly expected to see at the exhibition, if not in the competitive class at any rate in the loan section?

Class III, the scale model class, contains several very interesting exhibits, to which we intend, if possible, to refer later on.

Class IV, the r.o.g. class, was, as one would expect, the largest, and this class as a whole does its designers very considerable credit, some excellent examples of hollow spar work, wire bracing, wing design, wing covering, and chassis work are shown. The general design is for the twin rubber motors to be wound from the front.

The wood, or, to speak more correctly, the woods and materials, used in the building of the models, have in many cases evidently been selected with much care and judgment. Obviously the most suitable wood for a propeller, say, is not the best for wing spars, or the latter for some other portion of the machine. The nature of the material selected should obviously be such that it is strongest, most pliable, stiffest, &c., at those particular parts of the machines where such qualities are most needed—due regard being paid throughout to the all-important question of head resistance.

In class V—aero motors for models—only two are on view, viz., Mr. F. Mayer's Petrol Motor and Mr. C. Desoutter's Compressed Air Engine. Only one, namely Mr. Mayer's, has been submitted to the necessary bench tests, which were carried out at the East London Technical College. Mr. Mayer's motor experienced no difficulty in fulfilling the two minute trials—as a matter of fact, we understand from Mr. Mayer that this time was exceeded in each



Mr. C. Desoutter's scale model Caudron biplane. On the right his compressed air engine.

case. A piece of cardboard was provided to shelter the brake from the draught—in the first trial this touched an inlet spring lowering the r.p.m. After the brake test the motor was run, loaded with a propeller of 3 ft. 6 ins. diam. and 23 ins. pitch; the petrol remaining consisted of 1½ ozs. The motor started up at 1,100 r.p.m., and ran for five minutes up to 1,200 r.p.m., when the fuel gave out.

The total weight of the plant in running order, with fuel, is 6 lbs. 4 ozs., giving a 14-lb. thrust—quite sufficient, as Mr. Mayer says, to fly anything that even looks like an aeroplane. This is the second time that Mr. Mayer has submitted his petrol motors to the fullest official public test, with, to say the least of it, the most satisfactory results.

It is certainly most disappointing not to find one model at least at the exhibition fitted with this motor, the capabilities of which have now been so fully proved. We have, however, particulars of a photo. of such a model which we shall publish at an early date.

In Class VI—for single-screw r.o.g. weight-carrying models—five models are exhibited, all rubber driven. The maximum weight limit in this class is, we believe, a pound and a half—thus power-driven models are barred. Why? We have already had one competition for rubber machines of a similar character this year. Surely this is not the way to encourage model aviation as an aid to full-sized work. Amongst the five models exhibited in the loan section are a model hydro-aeroplane by Mr. G. P. Bragg-Smith, a petrol plant for model aeroplanes by Mr. F. Mayer, a rotary petrol motor with five cylinders by Mr. J. Ede, and a monoplane by Mr. H. R. Weston.

It must not be forgotten that the section dealt with above is only one of many, and any reader interested in model work of any kind could not do better than visit this Exhibition, which closes on Saturday evening, October 18th.

All scientific and engineering work—model or otherwise—is now so correlated and intermingled that, in order to excel in any one branch, a fairly intimate knowledge of several, it may be of many, others is needed.

The model aeroplane builder can study with considerable profit the exhibits, &c., in the other sections—the motor boats, for example, of which there is a very fine collection. And it is also equally true that model makers in other fields of model work could study many of the constructional details exhibited in aeroplane construction—in which clumsiness of design or any construction embodying needless employment of material is of necessity a thing unknown. Both strength and reliability depend far more on a proper choice of materials and their use in a correct form than in the quantity of stuff used; after all, all unnecessary weight is nothing more nor less than waste of material.

The Use of Wire as a Kite Cord.

"During the past week," writes Mr. O. Hamilton, "I chanced to look through some back numbers of the current volume of FLIGHT, and I found in August 23rd issue an enquiry relating to the above. Although not personally a kitist, I am in constant contact with one or two of my club members, who pride themselves that way, and the opinion I have heard them express on the subject

seems to favour wire, but it would seem there is danger of electrical induction during storms from the atmospherical electricity; one member states that he has seen sparks taken from such a cord during a storm. The remedy for that would be insulation or rubber gloves; in addition to that, gloves should always be worn to protect the hands from possible cutting, chiefly whilst getting the kite up.

Answers to Correspondents.

E. WILSON.—We are much obliged for your communication, and will make use of it in due course.

M. H. PEACOCK.—Shall be pleased to insert later on.

H. E. HERVEY.—We should be much obliged if you could send us some rough scale drawings, as well as photo sent; also particulars of gossamer proofing.

R. T. GOODCHILD.—That your model which flies straight or fairly so should curve off to one side (the right) does not strike us as curious. It would certainly be curious if it did not, as it would mean you had two perfectly identical propellers, save for the pitch, arranged accurately about the axis of symmetry. We do not see that the fact that the propellers are revolving inwards in one case and outwards in the other need of necessity affect it. Perhaps, however, some of our readers will describe any curious effects they may have observed when the propellers are interchanged. The model referred to flies main plane first, and flies best when the propellers turn inwards.

GODWIN.—The terms to which you refer are fully explained in FLIGHT, November 12th issue, 1910, page 936.

O. HAMILTON.—Personally we do not think it would be of the slightest use, but by all means write as you suggest.



A Pioneer Worker in Model Aviation.
—Mr. C. Fleming Williams claims to be the originator of (1) twin propeller duration model, (2) rubber lubricant, (3) propeller winding by geared drill, (4) propellers behind tail type, (5) hollow spars made in two sections, (6) first model hydroplane off water, (7) the system of float planes as separate attachments to floats to form hydroplanes.

KITE AND MODEL AEROPLANE ASSOCIATION.

Official Notices.

British Model Records.

Twin screw, hand-launched	Distance	R. Lucas	590 yards.
Single screw, do.	Duration	A. F. Houlberg	129 secs.
	Duration	H. Bedford	49 secs.
Twin screw, rise off ground	Distance	L. H. Slatter	365 yards.
Single-tractor screw, hand-launched	Distance	J. E. Louch	2 mins. 49 secs.
	Duration	C. C. Dutton	266 yards.
Do., off-ground	Distance	J. E. Louch	68 secs.
	Duration	C. C. Dutton	190 yards.
Single screw hydro., off-water	Distance	J. E. Louch	45 secs.
Single-tractor, do., do.	Duration	L. H. Slatter	35 secs.
Twin screw, do., do.	Duration	C. C. Dutton	29 secs.
	Duration	L. H. Slatter	45 secs.

Competitions Postponed.—The tractor competition fixed for Saturday last, 11th, was, on account of the rain, postponed till to-day, on Wimbledon Common, at 3 p.m. The 16 ozs. hydro. contest fixed for to-day will take place at the Welsh Harp on the 25th, after the Model Engineer Trials.

"Model Engineer" Trials.—All competitors who have not yet received admission tickets for Hendon should apply to the hon. sec. at once. Any reader wishing to see these trials, which should prove very interesting, especially the power-driven contest, can witness same by paying the usual admission fee of 1s. to the aerodrome—this will admit them to the course.

Aero Exhibition, 1914.—The hon. sec. will be pleased to receive any suggestions (from members and readers) for competitions to be held, so that they can be laid before the council at their next meeting.

Membership and Annual Subscriptions.—Members who have not sent their subscriptions for 1913 are asked to forward them at once and so help facilitate the work of the Association. The council hope all members will endeavour to extend the membership, and will introduce at least one new member each before Xmas. Subscriptions paid now carry membership till January, 1914.

Official Trials.—The next official trials will take place on the ground of the Paddington and District Ae. Club, on Saturday, Nov. 22nd.

27, Victory Road, Wimbledon.

W. H. AKEHURST, Hon. Sec.

AFFILIATED MODEL CLUBS DIARY.

CLUB reports of chief work done will be published monthly for the future. Secretaries' reports, to be included, must reach the Editor on the last Monday in each month.

Aero-Models Assoc. (N. Branch) (25, CHURCH CRESCENT, MUSWELL HILL, N.).

Oct. 18th, inter-club contest with Paddington Club, their ground.
Oct. 19th, practice, 10 a.m. Oct. 23rd, meeting at the "Cabin," 8 p.m.
Subject: "Gliders," and winter arrangements.

Leytonstone and District Aero Club (64, LEYSRING ROAD).

Oct. 18th, Hackney Marshes, 3 p.m. Oct. 19th, official flying at 10 a.m., near Sand Hills, Wanstead Flats.

Paddington and Districts (77, SWINDERBY ROAD, WEMBLEY).

Oct. 18th, inter-club contest with Aero-Models Association at Sudbury.

Sheffield Aero Club (35, PENRHYN ROAD, SHEFFIELD).

Oct. 18th, hydro-aeroplane contest for the President's Challenge Cup, Tinsley Park, Old Brick Yard, 3 p.m. Members meet at club room, 2 p.m. If weather unsuitable competition will take place following Saturday, same place and time. Members meeting, club-room in the evening, 7.15 p.m.

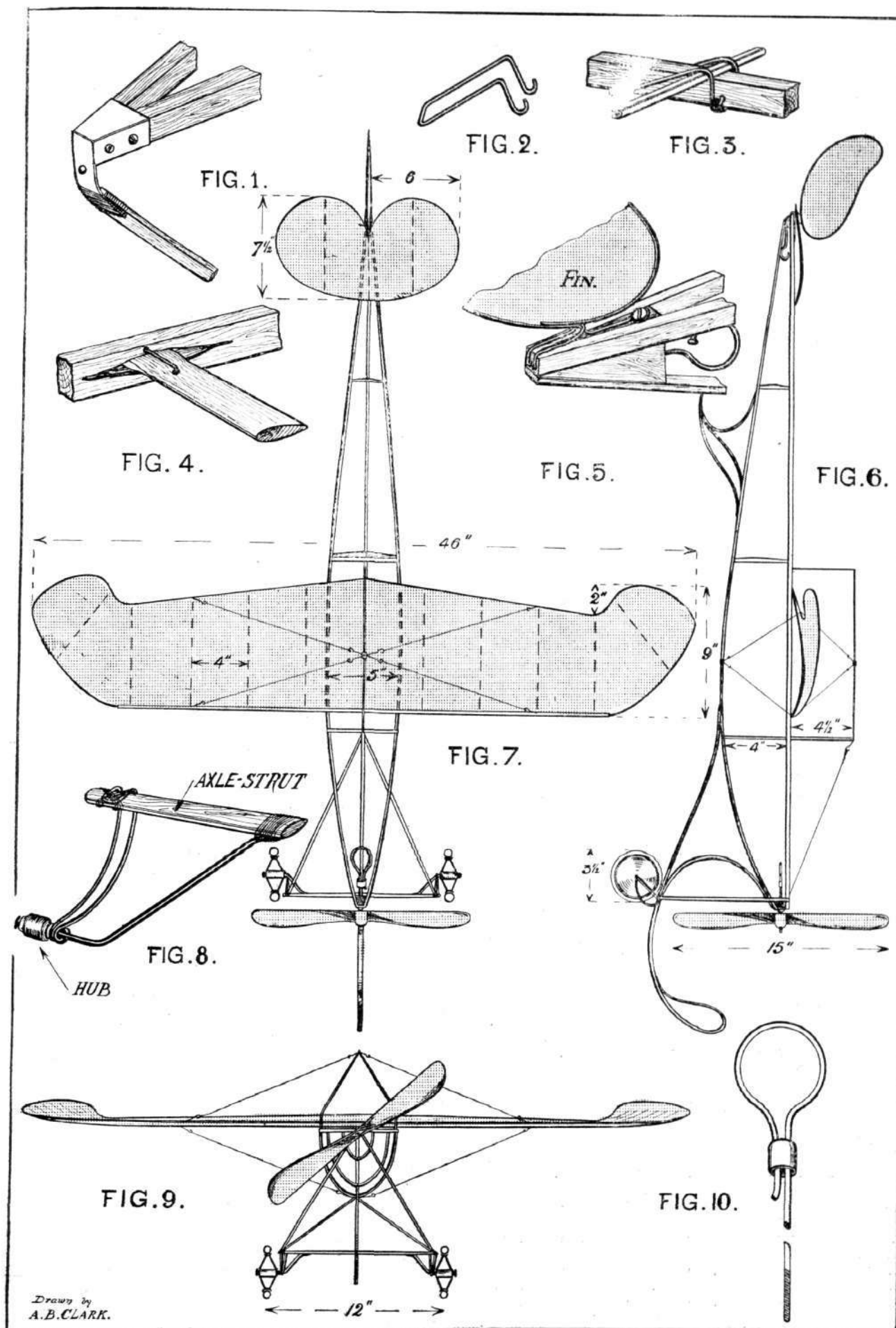
Wimbledon and District (165, HOLLAND ROAD, W.).

Oct. 18th and 19th, flying as usual.

UNAFFILIATED CLUBS.

Liverpool Aero Research Club (62, CEDAR GROVE, LIVERPOOL).
Oct. 18th, model flying demonstrations, Stanley Park, 4 p.m. Three mile point-to-point race. Meet Goodison Road.

S. Eastern Model Ae.C. (1, RAILWAY APPROACH, BROCKLEY).
Oct. 18th, Woolwich Common, 3.30 p.m. to dusk. Oct. 19th, Blackheath, 7.30 to 10 a.m. Lee Aerodrome, 10.30 a.m. to 12.30 p.m. Special attention is drawn to the suggestions embodied in this week's "K.M." report.



Drawn by
A.B. CLARK.

Drawings by A. B. Clark.

Mr. F. Plummer's model monoplane (to scale) which has been declared the winner in the second competition of the South Eastern Model Aero Club Trophy, the rules of which were published in FLIGHT of July 26th last.

MR. F. PLUMMER'S MODEL MONOPLANE.

THIS week we publish scale drawings of Mr. Plummer's model which has been placed first in the second competition for the South Eastern Model Aero Club Trophy, the rules of which were published in FLIGHT, on July 26th last. The drawings are by Mr. A. B. Clark, the Hon. Secretary of the S.E. Model Club, who also sends us the following particulars:—

In this contest, the machines had to be of the tractor type, weighing not less than 16 ozs., which accounts for the unusual size of this model, constructed by Mr. F. Plummer, the winner of the previous event. This monoplane succeeded in making a flight of 25 secs. after rising from short grass—no artificial starting surface being allowed.

The fuselage is built up of three 4 ft. lengths of specially selected silver-spruce (from J. Bonn and Co.), the two top members measuring $\frac{1}{2}$ in. by $\frac{1}{4}$ in. and the lower $\frac{3}{8}$ in. by $\frac{1}{8}$ in. The distance pieces are made from $\frac{3}{8}$ in. by $\frac{1}{8}$ in. split yellow bamboo, the maximum depth and breadth of the body being 4 ins. and 5 ins. respectively. Fig 4 shows how the distance-pieces are slotted into the main longitudinal. They are held in place with "plaster-of-Paris," and also wired with steel wire, afterwards the whole is bound over with glued silk ribbon, $\frac{1}{4}$ in. wide. A fuselage so built shows no tendency to twist even when the rubber is wound up to the highest tension.

The forward end of the body is strengthened with 22 gauge sheet brass as shown in Fig. 1. This metal nose forms the propeller-bearing. The rear end of the fuselage-members are bound on to a block of wood cut to the requisite shape, as seen in Fig. 5. The rubber-hook—a 15 S.W.G. cycle spoke—is attached through this wood, and the fin is screwed to the top of it.

The main plane is constructed wholly of 18 S.W.G. piano wire, except for the straight portion of the entering-edge, which is of light umbrella ribbing. This plane has a maximum span and chord of 46 ins. and 9 ins. respectively.

The rear edge tapers towards the end parallel rib, the chord being 7 ins. at this point. The tips are swept back 2 ins., i.e., level with rear edge of the plane at the centre. The camber is $\frac{1}{8}$ of an inch at the fuselage, decreasing to $\frac{3}{8}$ inch near the tips.

This plane is attached to the body with four clips (Fig. 2) made of piano wire. These pass over the edges of the plane, and are held in place by small elastic bands fitting on the hooks, and passing under the longitudinal members. This allows the plane to be easily detached. The plane is trussed up with fine steel wire to a Blériot type (old pattern) cabane $4\frac{1}{2}$ inches high, and to the lower fuselage member, but the wires are not attached direct, but to small metal clips, which slide along when the plane is being adjusted.

Proofed Jap-silk is used for covering all supporting surfaces in addition to the fin. The latter and the tail plane are both made of 18 gauge piano wire. The tail-plane has a span of 12 inches, chord $7\frac{1}{2}$ inches, and a camber of $\frac{3}{8}$ inch. This is laid flat on the body and wired thereto. The fin is 22 square inches in area.

The chassis is made of split bamboo, and is rather rigid, being of the A-type, therefore the wheels are mounted on springs, made of stout steel wire, 18 S.W.G., as shown in Fig. 8. The disc wheels are $3\frac{1}{2}$ ins. diam. The propeller is 15 ins. diam., and 22 in. pitch. This is carved from a solid piece of wood, and the tips are covered with silk to prevent splitting in the event of a bad landing.

The propeller shaft is fitted with a small device (see Fig. 10), to prevent the rubber from creeping off the hook while winding-up.

Although the running wheels are placed far forward, no difficulty is experienced in getting the model to rise quickly, which it generally does after a run of 6 or 8 ft.

No angle of incidence is given to the main plane, as when so fitted the machine always showed a tendency to dive, without recovering, when turning down wind. The total weight of the model is $19\frac{3}{4}$ ozs., and it flies on 22 strands of $\frac{1}{4}$ strip rubber, weighing $3\frac{3}{4}$ ozs. The weight of the tractor-screw is exactly 1 oz., without shaft.

IMPORTS AND EXPORTS, 1912-13.

AEROPLANES, airships, balloons, and parts thereof (not shown separately before 1910). For 1910 and 1911 figures, see FLIGHT, January 25th, 1912:—

	Imports.		Exports.		Re-Exportation.	
	1912.	1913.	1912.	1913.	1912.	1913.
January ...	619	12,097	2,412	4,005	—	1,510
February ...	3,110	17,361	36	3,447	—	690
March ...	640	20,425	950	1,924	600	1,042
April ...	4,820	15,593	72	5,524	50	1,413
May ...	7,494	51,241	1,350	3,726	154	830
June ...	7,928	14,905	419	1,408	300	1,106
July ...	13,794	14,469	5,376	3,812	967	1,250
August ...	8,559	17,993	1,342	2,805	2,040	510
September ...	6,575	19,409	2,885	6,263	1,626	1,470
	53,539	183,493	14,842	32,914	5,737	9,821

AIRSHIP AND BALLOON NEWS.

Airship Racing at Farnborough.

No less than three airships were seen at work at Farnborough on the morning of Tuesday last week. The "Delta" was cruising over the district, while the "Astra Torres" and the "Eta," with naval and military crews respectively, were seen travelling side by side for a little way. The "Astra Torres," however, is about six miles an hour faster than the new British airship, and so got ahead quickly.

The "Delta" Over London.

At last the "Delta" has passed her official tests and been taken over by the Royal Flying Corps. The final test consisted of an eight hours' non-stop cruise, which was carried out on Friday last week, the airship, starting from Farnborough and passing over London, visited Eastchurch, following the course of the Thames. During the return journey the "Delta" again passed over London and circled above St. Paul's Cathedral.

"Astra-Torres" Visits Portsmouth.

ON Thursday, last week, the "Astra-Torres," starting from Farnborough at 11 a.m., made a cruise of five hours, the itinerary, totalling to about 250 miles, taking in Portsmouth, Bournemouth, the Isle of Wight, and Winchester. Later in the day the airship was up for an hour in the fog, being quite lost to sight after rising 500 feet.

A Record by Italian Dirigible.

AN exceptionally fine cruise was made by the Italian military dirigible M2 on Tuesday. It left Ferrare on Monday evening, having on board Commandant Ponzio, Lieuts. Carniglia and Valerio, together with seven mechanics, and following the Adriatic coast passed over Ancone and Cape Gargano. After making some evolutions over the Gulf of Manfredonia it made its way, against a very strong wind, back to Ferrare, where the airship was safely housed. It had been in the air for 21 hours, and had traversed over 1,200 kiloms. The M2 is 82 metres long, 17 metres diameter, and has four 125 h.p. Wolseley motors driving 4-bladed propellers of 3'8 metres diameter.

Gordon-Bennett Balloon Race.

AT intervals of five minutes, eighteen balloons were despatched from the Tuileries on Sunday afternoon in the Gordon-Bennett balloon race. M. Bienaime, last year's winner in the "Picardie" led the way at four o'clock, followed by Mr. John Dunville in the "Banshee," while the second British representative, Mr. J. de Francia in the "Honeymoon," started ninth. The wind, what there was of it, came from the north-west, and it was expected that the competitors would progress slowly in the direction of Geneva. The wind, however, veered round, and the balloons drifted in all directions. One of the American competitors, the "Goodyear," piloted by Mr. Upton, landed at Bampton, near Bridlington, at midday on Tuesday, while Mr. John Dunville brought the "Banshee" down at Pleneuf, on the Brittany coast, on Tuesday morning. Close by, the "B.A." (Italian) and the "Roma" (Italian) landed, while others which stopped at the coast of France were the "Duisburg" (German) at St. Malo, the "Ile de France" (French) at Trevou, the "Patrie" (Belgian) at La Roche Derrien, the "Hamburg" (German) at Cape Frehel, the "Helvetia" (Swiss) at Boraec, the "Stella" (French) at Plestin-les-Greves, the "Metzler" (German) at Ducey, the "Astarte" (Austrian) at Lannion, and the "Belgica" (Belgian) at St. Michel-en-Greve. The "Picardie" (French) landed at Cordemais, near St. Nazaire, and the "Honeymoon" (British) at Langeux, near St. Brieux.

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